JOURNAL *of* EDUCATIONAL RESEARCH

Volume XXXIV DECEMBER, 1940 Number 4

ASSUMPTIONS UNDERLYING RESEARCH DATA*

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Editor's note: School people everywhere are attempting to think more effectively about the problems arising from their every day activities as teachers, supervisors and administrators. The author discusses some of the pitfalls in the paths of those who would think more effectively.

LOOKING for assumptions in research is something like looking for shadows in the late afternoon. They're everywhere. And once one starts noticing them he suddenly becomes aware that the world is full of them. In fact, if one contemplates the assumptions that underlie nearly everything he does, he quickly decides he had better stop such contemplating lest he conclude that nothing at all can be done with sufficient confidence to warrant doing it. There are so many uncertainties of so many different kinds in even the best of scientific work that one wonders why it is anything ever turns out right.

Practical undertakings, and human dynamics in general, exist in defiance of a myriad assumptions that beset them on every hand. When one undertakes a study he assumes in the large that it will be worth while, that he will live to see it through, that no great social upheaval will interrupt his work or the dissemination of his findings. He trusts that the janitor will not discard important sets of data, that the calculating machines won't make too many mistakes, and that some zealous helper won't change critical figures to make them come out "right." He also knows that he will necessarily make uncounted technical assumptions in the process of his work. The more one knows of the difficulties of sound research the more courage is required. For one soon learns that he will never know enough to answer all of the questions which arise in the prosecution of even a single study.

* Read before the American Educational Research Association at St. Louis, February 26, 1940.

Previous treatises on research postulates[1] and assumptions[2] have outlined their general range and a systematic discussion of various kinds of assumptions will not therefore be attempted here. Instead, we may give attention specifically to those assumptions which affect rather directly one's observations—one's data. It is worth while for one to consider the data he has in hand, before he begins the statistical analysis of them—for the analysis usually takes the observations for granted.

The arch assumption that we make with reference to our data is that they represent what we think they do. This assumption lies at the very heart of inductive research. We may note that it is the point at which research has gone astray on countless occasions throughout the history of man's endeavor to be scientific.[3] It has fathered, and continues to foster, all kinds of fallacious conclusions[4]—for from this point on in his work the researcher builds a logical chain of reasoning to his conclusions. If the assumption of valid data is unsound, the conclusions are almost certain to be. If, on the other hand, the scientist could be certain that his data represented precisely what he thought they did, he could proceed with great assurance.

What are the things that can be wrong with one's data? What are the component assumptions upon which the general assumption of validity rests? We may for convenience say that there are three principal areas of difficulty, with their attendant assumptions. These areas are related, first, to the question one has undertaken to study; second, to the cases or events which he accepts for observation; and third, to the methods which he uses for observing or quantifying these cases or events. The remainder of the paper will deal with these three areas and some of their assumptions. They all enter into and affect the somewhat hopeful, somewhat ingenuous assumption we commonly make that our data represent what we think they do.

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[1] Gray, John Stanley. "Scientific Postulates for Educational Research," *Educational Administration and Supervision*, XIX (January, 1933), pp. 18–24.

[2] Scates, Douglas E. "Types of Assumptions in Educational Research," *Journal of Educational Psychology*, XXVI (May, 1935), pp. 350–66.

For assumptions in measurement see footnote 22.

[3] Bancroft, Wilder D. *The Misleading Experiment*, Rice Institute Pamphlet, XV, No. 4 (Houston, Texas: The Rice Institute, October, 1928), pp. 224–85.

[4] Jastrow, Joseph, ed. *The Story of Human Error* (New York: D. Appleton–Century Co., 1936), 445 pp.

1. FORMULATING THE PROBLEM FOR STUDY

The first of the three areas—that related to the question which we undertake to study—has not received adequate attention. Our literature does not deal with the matter explicitly and systematically. Yet the formulation of a problem is as crucial as any other phase of research. We commonly ask absurd questions of nature and expect sensible answers. We circumscribe our entire study with some narrow, ill-considered concept, and expect to find truth. We pin our attention on a few readily observable factors, and are disappointed when we fail to obtain a full explanation.

Among the difficulties connected with the formulating of a satisfactory question we can find at least five problems. In the first place, we may be attempting to study a factor which does not exist. This has happened time and again in the history of natural science, and it may be happening to us in some of our present day research. It is likely to happen when one is working in a new area, where the forces, objects and relationships have not been well explored, and one forms crude concepts which not until later are seen to be incongruous with other data. As an early example we may note the groping of the Greek philosophers for a "first principle" which would explain the entire physical world about them.[5] In the sixth century B. C. this seeking for the original factor from which all other things could be derived was an important question. Various answers were derived—water, air, fire, and number. We have ceased looking for a single foundation for all materials and forces, and have substituted a long list of elements and relationships instead. We have even analyzed the elements into electrons, protons, neutrons, etc. These more modern ideas fit better into various observations and theories and so we no longer believe that a *single* factor exists. So long as the pursuit was directed toward the finding of a single principle these other possibilities were neglected, and the whole outlook was seriously circumscribed. Answers were found, yes, but not answers that were supported by unrestricted observations.

A classic example of the study of a factor which does not exist is afforded by phlogiston.[6] This concept was invented by Stahl, a German chemist, in the seventeenth century, to explain combustion. According to

[5] Cubberley, Ellwood P. *The History of Education* (Boston: Houghton Mifflin Co., 1920), p. 40.

[6] Wolf, A. *A History of Science, Technology, and Philosophy in the Eighteenth Century* (New York: The Macmillan Company, 1939), pp. 342–374.

the theory, every combustible substance was composed of phlogiston and an ash; in burning, the phlogiston escaped into the air, leaving the ash. According to our present knowledge there is no such thing as phlogiston; we believe in the process of oxidation instead. But the belief in phlogiston persisted for a hundred years, and was supported by innumerable experiments. It is worth noting that so long as experimenters framed their questions in terms of phlogiston they not only found it to exist, but were able to study its properties. When Lavoisier in the eighteenth century decided that phlogiston did not exist and began formulating experiments in other terms, phlogiston disappeared. We wonder how many of our current studies are finding results just because we assume certain concepts in the formulation of the problem and then attach our findings to these concepts —whether the concepts represent anything real or not.

In the second place, we may be asking too simple a question. We assume that nature is as dichotomous as some of our easy thinking. For example, much of the work on transfer of training has been directed toward the question of whether there was or was not transfer.[7] The more important questions of the conditions and the mechanisms of both positive and negative transfer have been largely ignored[8]—except for theorizing. Even yet one may be critical of transfer studies because the terms of the problem have not been well defined; and one may even question whether the entire problem is not artificial—a somewhat restricted view of the general process of mental integration. The question of whole *vs.* part learning of poetry has been generally attacked in the same spirit—assuming that one or the other method must be superior, regardless of the multiplicity of factors that condition the learning.[9] And we are still waiting to know what "whole" means and what "part" means. If one has imagination he wonders why there might not be unlimited combinations of whole and part, with a much more complex—and more natural—process of directing attention than has been generally admitted in the studies. Another example is found in the study of the hour during the school day when children are most efficient. Different studies have found every period during the day to be the most

[7] Starch, Daniel. *Educational Psychology* (New York: The Macmillan Company, 1929), pp. 219–95.

[8] Brownell, William A. "Theoretical Aspects of Learning and Transfer of Training," *Review of Educational Research*, IX (June, 1939), pp. 268–73.

[9] McGeoch, Grace O. "A Revaluation of the Whole-Part Problem in Learning," *Journal of Educational Research*, XXVI (September, 1932), pp. 1–5.

efficient![10] We form our questions in such stilted fashion, so heedless of the complexities that exist in phenomena,—and force answers to questions for which no answer exists.

A third danger we encounter in planning a study is that the trait or class of objects we desire to characterize may not be homogeneous. We are often misled by a name: because we can give a single title to a general character or class we assume that the name is a guarantee of sameness. Illustrations of heterogeneity of cases are to be found in studies of research bureaus without proper differentiation as to kind, purpose, organization, etc.;[11] or in studies of family expenditures without regard to composition of the family, income level, location, and occupation, considered jointly.[12] We sometimes treat teachers, children, and other groups as though all members were alike, overlooking important differences. Undoubtedly many a carefully planned experiment in child psychology or learning has been vitiated by differences in personality structure or learning habits among the children. Such factors are probably more important than sex differences.[13] Heterogeneity may also be encountered in the experimental variable (as direct and alternating current in producing shock[14]), or in the resultant variable (as immediate and delayed memory[15]). Units employed for fractioning or distributing aggregates are frequently so general as to represent two or more effectively different situations. Examples are common in administrative studies, as unit costs per pupil in cities having different proportions of high school pupils,[16] or costs per cubic foot of buildings where different

[10] Freeman, G. L., and Hovland, C. Iver. "Diurnal Variations in Performance and Related Physiological Processes," *Psychological Bulletin*, XXXI (December, 1934), pp. 777–99.

[11] Witsky, Jonas. "The Organizations and Functions of City School Research Bureaus," *American School Board Journal*, XCVI (April, 1938), pp. 25–27, 89.

[12] Williams, Faith M., and Zimmerman, Carle C. *Studies of Family Living in the United States and Other Countries: An Analysis of Material and Method*, U. S. Dept. of Agriculture, Miscellaneous Publication No. 223 (Washington, D. C.: Government Printing Office, 1935), 617 pp.

[13] Allen, C. N. "Recent Research on Sex Differences," *Psychological Bulletin*, XXXII (May, 1935), pp. 343–54.

[14] Lorge, Irving. "Physiological Aspects of Lethal Shock," *Psychological Bulletin*, XXXII (March, 1935), pp. 197–202.

[15] Harder, Keith C. "The Relative Efficiency of the 'Separate' and 'Together' Methods of Teaching Homonyms," *Journal of Experimental Education*, VI (September, 1937), pp. 7–23.

[16] Scates, Douglas E. "Unit Costs of Increasing High-School Enrollments," *American School Board Journal*, C (May, 1940), pp. 39–40.

proportions of the buildings represent auditoriums, gymnasiums, porches, etc. Studies of per cent of utilization of buildings have to be careful about lack of homogeneity in the kind of rooms included in any one class.[17]

Most cases of undesirable heterogeneity are due to ignorance of the differences and their consequences, and perhaps to lack of means of identification. For example the early chemists did not know that air was composed of more than one gas; and in fact they did not distinguish, either conceptually or practically, between many gases and ordinary air.[6] Cases of lack of homogeneity are usually obvious after being pointed out, especially when the significance of the critical variations has been established; the difficult thing is to know in advance whether the cases or traits are sufficiently homogeneous, with reference to factors which are probably not included in the study, to warrant regarding them as constant for the given purpose. Occasionally lack of homogeneity is revealed by data included in a study but is not detected by the worker because he did not plan his study in such a way as to differentiate between the classes of cases. Or one may not discover the heterogeneity until so far along that he has not the means to go back and retabulate his data. Or he may not recognize its significance when discovered. Heterogeneity often leads to a lack of relationship being observed, because of "averaging out," or to erratic results. It constitutes one of the leading pitfalls of research.

A fourth assumption we make in planning our studies is that we are investigating all of the important aspects of the problem. This assumption is somewhat more general than the assumption of homogeneity. That is, after we have secured homogeneity of the cases and of each of the factors, it is still possible that we have omitted important factors from our study. This assumption is particularly important when we are attempting to describe or to account for some condition by studying pertinent factors; or when we employ certain factors to represent some more general trait or condition (a problem of indexing); or when we attempt to predict or estimate from variables which are not adequate. One may make case studies and not include vitally important traits; one may study "causes" of absence, poor work in school, or dropping out of school, and may direct his attention only to factors for which he can readily obtain data; in formulating

[17] Morphet, Edgar L. *The Measurement and Interpretation of School Building Utilization*, Contributions to Education, No. 264 (New York: Teachers College, Columbia University, 1927), 102 pp.

a questionnaire, one may omit elements which actually are the most important ones; in attempting to index the attractiveness of reading material one may overlook aspects that are the most potent determiners, and so on. If one conceives of his problem in too mechanical terms he may gather data which seem to prove all sorts of things, but which miss the essential relationship. It is natural to assume that the factors one thinks of are the crucial ones.

A fifth source of danger connected with the concept of a problem is in formulating it in such a way that it will serve certain desired purposes. That is, we might undertake a study that would be entirely satisfactory in itself but would not be satisfactory for the purpose for which we intend to use the results. As one illustration of this difficulty we may mention some of the earlier comparisons of essay and objective tests. The studies of reliability were confined largely to scoring—but the findings were interpreted as though they were characteristic of the entire testing process. The findings were correct, but the extension of the findings to imply differences in the reliability of objective and essay test results in general was erroneous.[18] Another illustration is found in error studies—counts of errors in arithmetic, in spelling, in composition, etc. Such studies may in themselves be neat and conclusive; but they are usually undertaken as a basis for curriculum work, and as such they leave much to be desired. [19] Frequency counts of usage, of conceptual references in newspapers, and the like, fall in the same class. In the past workers have evidently assumed that the results would immediately become the basis of curriculum work—or perhaps would in fact constitute the curriculum. We know better now, but we are doing the same thing in other fields—formulating problems for study with the assumption that the findings will answer questions of greater magnitude and greater dimensionality than the simple questions we set forth for study. While the error lies in the realm of interpretation and application of findings, this application is in the mind of the worker when he outlines his study and it is therefore an assumption entering into his concept of his problem.

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[18] Pullias, Earl V. *Variability in Results from New-Type Achievement Tests,* Duke University Research Studies in Education, No. 2 (Durham, N. C.: Duke University Press, 1937), 100 pp.

[19] Good, Carter V., Barr, A. S., and Scates, Douglas E. "Interpreting Frequency Studies," *The Methodology of Educational Research,* pp. 355–64. (New York: D. Appleton–Century Co., 1938), 890 pp.

These illustrations suggest that the way we formulate our problem for study largely determines what we find; that we can find most anything we are looking for by limiting our problem so that we exclude cogent evidence; that we can even find and describe phantom factors which have no actual existence. The bearing of these points on the general assumption that our data represent what we think they do is evident.

2. THE ADMISSION OF CASES TO THE STUDY

We come now to the second area of difficulty, that associated with the choice of cases or events which we will observe in our study. We naturally assume that the cases or events which we observe are suitable for our purpose—after we have taken reasonable precautions. Perhaps we should examine some of the precautions which are necessary in order for this assumption to be true.[20] Our cases carry a dual obligation: they must in the first place represent the factors which we are seeking to study, and in the second place they must represent the field or the universe which we are seeking to describe. With reference to the first of these obligations, we must assume that the factors we are seeking to study have actually acted upon the phenomena we observe in the presumed ways, and conversely that unobserved factors have not acted in such a way as to obliterate the effects of the factors we have in mind, or, even worse, to give us effects which we may with some warrant attribute to the factors we are trying to study. The necessary assumptions at this point are extremely hazardous, for we can seldom know all of the subtle factors which operate in a telling way upon our data.

A few illustrations will point out the dangers, and may help in making us wary—though they can't make us sufficiently wise to know how to avoid all of the pitfalls. Four types of difficulty will be mentioned. First, the factors we seek to study may not have been observed over their full range of operation—or over a wide enough range. We may take striking cases from another field:[3] chemists found that a thirty-minute exposure to concentrated hydrocyanic acid gas did not kill boll weevils; they might have concluded that this gas was not effective on boll weevils, but they tried a low concentration of the gas and found it lethal. The boll weevil simply

[20] Eddington, Sir Arthur. *The Philosophy of Physical Science* (New York: The Macmillan Co., 1939), 250 pp.

refused to breathe the strong gas and was not harmed by it! Contrarily, a high concentration of the gas killed scale insects on citrus trees, but a low concentration stimulated them. Of course the same thing is true of drugs and human beings; moderate amounts of strychnine are stimulating. One knows these things; and yet there are few studies which are carried far enough to test out wide ranges of various conditioning factors. One wonders about the results of certain learning or instruction experiments which are carried out for a few weeks or months only. What would happen if they were continued for a full year, two years, or for an entire education? What would happen if, in the laboratory, an electric shock were varied through all reasonable degrees, instead of being simply "a shock?" Medical science almost went without an explanation of diphtheria in the nineteenth century because Roux experimented with diphtheria broth that had incubated only four days; when it had stood for 42 days, one six hundred thousandth of an ounce was sufficient to kill a guinea-pig.[21] Needham once reported spontaneous generation of life in bottles of broth; but another worker sterilized the bottles for an hour instead of for a few minutes, and found no life.[21]

A second source of uncertainty in cases is their lack of constancy or uniformity. This is a special form of heterogeneity, growing out of variables associated with time. Unless safeguards are used, this changeability will lead to unusual difficulty in identification, and to chaotic results, or wholly erroneous conclusions. Recent studies in vitamins afford examples that are in our own time and partly in our own field of interest. Early experiments with codliver oil gave mixed results, until it was found that the oil varied in vitamin potency. Powdered milk was at first thought to have vitamin C destroyed, because a particular sample was low; but when samples of powdered milk were compared with the raw milk from which they were made, and the comparison continued throughout all the seasons of the year, little difference between the powdered and raw milk was found —but both were found to vary a great deal from summer to winter. The early test had been made on winter powdered milk only.[a]

A third danger is selection of biased cases, or even entire populations. This is but a special instance of the effect of variables other than those

[a] de Kruif, Paul. *Microbe Hunters,* p. 31–40; 188–92. (New York: Harcourt, Brace and Co., 1926), 363 pp.

studied. It is in part a matter of sampling, and that subject has an extensive literature. But in certain respects it falls outside of the problem of sampling as usually conceived, because it frequently arises in such a way as to affect an entire group or population in a field being studied. In this sense the difficulty arises because we do not know the universe; we probably have no definite universe in mind, and if we did we could not define it. We may employ the usual criteria of sampling to obtain a satisfactory sample of a given population, or we may even include the entire population; but this will not guarantee that our results are typical of the populations to which they will unavoidably be extended. We are for the time being more interested in studying certain groups than in sampling a universe. The danger comes when our results are interpreted generally. Certain findings may be true for children in one section of the country but not in another; for children of a given age range, a particular personality, family condition, etc. Until we have completed extensive studies of various factors we cannot know whether our generalizations are being extended too broadly or not. It is not sufficient to have the population being studied homogeneous; it is important to know how far in our group is typical, or constitutes a homogeneous element when fitted into a still larger set of groups.

A fourth danger in interpreting our data as due, or not due, to certain factors may lie in the over-emphasis of sampling error theory. We are prone to attribute as much as possible to chance up to a certain point—and beyond that, to attribute no results at all to chance.[23] That is, if an occurrence is reasonably probable, in terms of pure chance, we lose interest in it. There is reason to believe that some of what is commonly regarded as chance may be the result of interesting factors which we have not yet gotten around to study—or perhaps even think of. Time alone will tell; meanwhile we ought to be cautious in being cautious!

In dealing with this second area of difficulty—the assumption that our data have been taken from cases or events which represented the operation of factors we have in mind—we sense the need for a larger perspective of our work. We typically assume that we have given attention to all important factors, that we have eliminated other significant factors, or that

[23] Walker, Helen M. "Testing a Statistical Hypothesis," *Harvard Educational Review*, IX (March, 1939), pp. 229–40.

they will average out, or fall within the range of chance. Undoubtedly we sometimes make assumptions which are good—and oftentimes we do not.

3. METHODS OF QUANTIFICATION

The third and final area which was referred to is that of the manner of observing. If we have avoided unjustified assumptions in planning our study and in locating cases or producing events, we still have to give concern to our methods of counting and measuring. This area is a separate field in itself, and there is an abundance of literature on it, so that it need not be treated extensively here. We may however mention two or three aspects which involve important assumptions.[23]

In the first place we frequently measure, or index, indirectly. We presume to measure mental characters through various overt manifestations; we index the difficulty of reading material through counting various specified elements, and so on. There are obviously assumptions of validity involved. In the second place we normally narrow our observations to fairly simple traits. This practice is in part a matter of convenience, in part a concept of science. In measuring reading we may take such simple aspects as speed and errors. In studying the effect of conditioning dogs to food and some simultaneous stimulus experimenters have customarily measured the amount of saliva flow, or some similarly simple aspect. Only recently has an observer attempted to give a more adequate picture of all the observable behavior of the dog.[24] As scientists, we may feel that we are constrained to observe as narrow and simple traits as possible, one or two at a time.

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[23] For various points of view regarding assumptions involved in social science measurements see the following references:

May, Mark A. "Research in the Measurement of Abilities, Aptitudes, and Achievement," especially section VI on basic assumptions, p. 68–72. In: *Educational Research.* Report of the Committee on Educational Research, Henry W. Holmes, chairman. American Council on Education Studies, Series I, No. 10 (Washington, D. C.: The Council, 1939), 189 pp. This treatment cites further references by Mark A. May, B. O. Smith, and L. G. Thomas.

Johnson, H. M. "Pseudo-Mathematics in the Mental and Social Sciences," *American Journal of Psychology,* XLVIII (April, 1936), pp. 342–51.

McGregor, Douglas. "Scientific Measurement and Psychology," *Psychological Review,* XLII (May, 1935), pp. 246–66.

Scates, Douglas E. "How Science Measures," *Journal of Experimental Education,* V (March, 1937), pp. 296–312.

[24] Zener, Karl. "The Significance of Behavior Accompanying Conditioned Salivary Secretion for Theories of the Conditioned Response," *American Journal of Psychology,* L (November, 1937), pp. 384–403.

Yet one must note that science often closes its eyes to a large part of the picture; and one wonders if the assumptions which are necessarily involved are justified.

In the third place our measurements normally assume linearity in the trait they purport to measure. It is time we seriously challenged this assumption. Whereas it has been common to upbraid our educational and psychological measuring instruments because of their lack of a uniform scale, absolute zero point, and so on, such criticisms rest upon the assumption that our traits themselves are homogeneous, uniform, linear, and generally like those of the physical sciences. We do not know that that is the case; in fact, we are pretty certain that it is not the case. Educators and psychologists are interested principally in two groups of traits—growth or development in ability, and value or merit. Growth is clearly not uniform in its manifestations, and value probably is not.

To take a simple illustration, let us consider the growth of a plant. At first, growth is a process of germination, then of developing stalk and foliage, and finally flowers, fruit and seed. Is there any single element in this process that is at the same time uniform and representative throughout these different stages? If one attempts to measure growth by measuring height, by counting leaves, or by weighing mass, he obtains measures which may each be valid for reflecting changes during certain narrow stages of growth, but none of which is valid for the whole range of growth. The case is equally obvious in a school subject, such as reading. As the child develops in reading ability his learning takes on new aspects at various stages. His understanding develops, his span of attention broadens, he learns to read differently for different purposes, he matures in tastes, discrimination, and judgment, and eventually fits reading into a program of life needs and interests. Growth in reading is not a process of just reading more and more words, nor of reading them more rapidly.

It may be justifiable to measure reading as though it were a single, uniform trait, representable linearly, if we have a definite interest in some particular aspect we are measuring, and if we do not generalize our interpretation and conclusions. But we dare not assume that by so observing we are measuring growth in reading ability as a whole, except over comparatively narrow ranges. We are only measuring selected aspects of the trait, and there may be no single aspect or simple group of aspects that

bears a linear relation to the development of the trait as a whole. Perhaps we cannot prove the point one way or the other, for we have no way of measuring all aspects of reading ability and combining them into an acceptable single index; but there is more reason for believing that the total ability is not linear on any single aspect over a wide range of growth than for believing that it is.

The physical sciences can express their fundamental aspects—mass, distance, and time—as highly abstract, simple, and perfectly uniform concepts. Such concepts are additive in character of increase and may be represented linearly to advantage. Other units needed in physics can be built up as more or less mechanical compounds of units of these basic traits. In the social fields our most important traits are not like those in the physical sciences; our most important traits are complexes having too intricate a structure to admit readily of indexing by the compounding of simple units. It is time for us to recognize this difference, and cease demanding that our measures meet criteria which the physical sciences have found appropriate. Research in education and psychology has been greatly aided by lessons learned from the physical sciences; but we cannot borrow everything we need, for our data and our problems are different. It is possible that we have already borrowed too much; it may be that we have reached the point where we must retrace our steps, throw off the inappropriate elements of the borrowed ideas, and start again if we are to grapple realistically and fruitfully with our own problems. Certain it is that, to believe that the basic scientific concepts which have proved useful in the physical sciences will also prove useful in the psychological sciences without appropriate modification, is an assumption of the first magnitude. The acceptance of this assumption without subjecting it to the most searching scrutiny and evaluation is something we cannot afford to do.

This paper is an attempt to look behind the almost invariable assumption that our data represent what we think they do, and state some of the subordinate assumptions which should affect our faith in the data. The first condition mentioned was, Have we asked a fair question of nature? or have we forced the issue, so that we get back something that is not representative of the true condition? The second condition was, Have we observed cases or events that represent the factors and fields we set out to study—or do they represent more strongly other factors (perhaps unusual)

which we may be ignoring? The third condition was, Have our observations of the cases represented the conditions and degrees as fully and as accurately as our interests require?

If it be objected that the writer has made everything we do rest upon assumptions and has made it appear precarious and uncertain, he would reply that that is what he has meant to do. For that is exactly as he sees research—and life in general. The whole structure of our existence, including our most refined thinking, consists of a multitude of variables, representing a variety of probabilities. Some of these probabilities are high, some are low. It is our endeavor as research workers to make certain selected probabilities as high as possible so that they represent practical certainty. But never let us assume that we know and think with such precision that we can invade the unknown with high confidence. The mature research worker knows the dangers, recognizes the hazards, appraises carefully the difficulties, and in full realization of the uncertainties, employs the currently approved techniques, and modestly but hopefully reports his findings.

A STUDY OF THE EDUCATIONAL STATUS AND SOME EDUCATIONAL IMPLICATIONS OF A LOCAL RELIEF POPULATION

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Editor's note: Many questions and issues have arisen out of current social and economic conditions and practices. The authors present data relating to certain effects of the work relief program.

WIDESPREAD public relief as an apparently permanent social and economic factor is so comparatively new a feature of American life that little is known about the effects it is likely to have upon other public institutions and the traditional modes of American life.

Since the public school systems are, in accordance with American traditions of democracy, open to all who wish to avail themselves of their services; these school systems are enrolling and will, in all probability, continue to enroll children from dependent families. In addition, American educators are striving, wisely or foolishly, to extend the age range for compulsory school attendance both upward and downward—often without accompanying financial provisions for the schools that will enable them to care for the increased enrollments and the new types of education deemed desirable. It follows that American educators should be increasingly conscious of the educational problems which a relief population is likely to present to educational institutions and practices.

In order that more specific information on this subject might be made available, the writers studied the case histories of 256 families on file in the relief office of an Oregon county. Old age assistance and transient relief cases were omitted as not representative of the local relief population of the county. All of the families studied have resided in Oregon for at least three years and in the county for at least one year. Each of them was at the time of its application for relief sufficiently destitute to qualify for financial assistance. This was the total number whose official records were complete enough in the information desired for use in this study.

The following information was sought from these records: (a) the age of the husband, (b) the age of the wife, (c) the grade reached in school by the husband, (d) the grade reached in school by the wife, (e) the number of children in the family, (f) the number of children in school,

(g) the ages of the children in school and the grades in which they were located. From this last item, an estimate of the acceleration or retardation of the children was made.

The following tables are largely self-explanatory. Table I gives the chronological ages of the 256 husbands studied, their mean age and its S.D. It may be seen that the group is predominantly a young group.

TABLE I

CHRONOLOGICAL AGES OF THE HUSBANDS

Ages	No.
74–87	3
60–73	22
46–59	58
32–45	86
18–31	89

Mean 39.5 ± 14.0 (S. D.)

Table II gives the chronological ages of the 245 wives for whom the information was available.

TABLE II

CHRONOLOGICAL AGES OF THE WIVES

Ages	No.
59–69	11
48–58	27
37–47	54
26–36	76
15–25	77

Mean 33.9 ± 12.7 (S. D.)

Table III gives the grades reached in school by the 255 husbands according to the information contained in the relief office files. With both the husbands and the wives, lack of formal education could not, in itself, have been an important factor in their present status.

TABLE III

SCHOOL GRADES REACHED BY THE HUSBANDS

Grades	No.
16–18	4
13–15	25
10–12	45
7– 9	142
4– 6	36
0– 3	3

Mean Grade 8.7 ± 2.8 (S. D.)

Table IV gives the grades reached in school by the 203 wives for whom this information was available.

TABLE IV

GRADES REACHED BY THE WIVES

Grades	No
16–18	4
13–15	15
10–12	67
7– 9	97
4– 6	20

Mean 9.3 ± 2.5 (S. D.)

Table V shows the number of children in the 256 families studied.

TABLE V

SIZES OF THE FAMILIES

No. Children per Family	No. Families
12–14	1
9–11	3
6– 8	24
3– 5	81
0– 2	147

Mean number of children per family 2.7 ± 2.2 (S. D.)

Table V shows the mean number of children per family to be smaller than one might have anticipated. This might have been due, to some extent, to the youthfulness of the majority of the parents. In order to have a better perspective on this problem the writers tabulated the number of children in the families which were probably completed, that is, those families in which the wives were forty or more years of age. This information is given Table VI for the seventy-nine families which fell into this group.

TABLE VI

SIZES OF THE PROBABLY COMPLETED FAMILIES

No. Children per Family	No. Families
12–14	1
9–11	2
6– 8	11
3– 5	32
0– 2	33

Mean 3.4 ± 2.6 (S. D.)

When one compares the sizes of these families with those of the feeble-minded in many of the earlier studies, he finds the families of these people on relief distinctly smaller. Reasons for this may be: (a) the convenience

of the parents, (b) the economic liability which children present rather than the economic assets they presented formerly, and (c) the uncertainty of the economic futures of the parents.

Table VII gives the scholastic acceleration or retardation, in terms of years, of the 163 children from the 256 families who were or had been in school at the time of this study. The acceleration or retardation of the children was arrived at by recording the age of the child and his grade in school, and checking both against a scale which presumed that a child six years of age should be in the first grade, a child of nine years of age in the third grade, etc. Allowance was made for a year's expiration within a grade before the completion of that grade.

TABLE VII

ACCELERATION OR RETARDATION OF THE SCHOOL CHILDREN IN THESE FAMILIES

Years Accel. or Retarded	No. Children
+2— +3	2
0— +1	60
—1— —2	85
—3— —4	14
—5— —6	2

Mean years (retarded) 0.94 1.36 (S. D.)

The average child in this group as found to be 0.94 years retarded in school for his age or about eight months behind his group. The number of children who were accelerated was equal to the number retarded from five to six years. Thirty-seven per cent of these children range from normal in grade placement to nine months in acceleration. Fifty-three per cent are retarded from nine to eighteen months.

BEHAVIOR RATINGS AND SCHOLARSHIP AMONG COLLEGE FRESHMEN

C. GILBERT WRENN and ELIZABETH B. CRANDALL

Editor's note: Achievement in any area is ordinarily the product of many factors. The authors present data on the relationship between certain behavior factors and academic achievement among freshmen at Stanford University.

A SLIGHTLY modified form of the American Council Rating Scale has been used for admissions purposes at Stanford University for the past eight or ten years. Each entering student is required to have two copies of the scale filled out by those who know him, at least one of these by a secondary school or college teacher or administrator. These blanks are mailed to the University by the persons filling them out.

The purpose of the study reported here was to discover the value of the rating scale for predicting the scholastic success of the student in the University. The scale is not used by the Admissions Committee primarily as a scholastic predictor but as an indication of personality characteristics that might be significant in the total development of the student. The traits or habit patterns indicated in the scale are assumed, however, to bear a definite relationship to scholastic success so that the scale relates at least indirectly to scholarship. The specific questions of this study were: What is the relationship of the specific scale ratings to scholarship?; and secondly, what is their relationship to other objective data such as intelligence test scores and personality test scores? A further intent of the study was to find the differential values of the five items of the scale in predicting scholarship.

All of the entering freshman class of 1933 except those who had failed to complete the first quarter of the freshman year were used as subjects, with Stanford *College Aptitude Test* scores, Bernreuter *Personality* Inventory scores and freshman grades as the criteria against which rating scale values were to be evaluated.[1] The subjects consisted of 345 freshman men and 193 freshman women, a total group of 538 in which the sampling was complete of those who had entered the second quarter of the freshman year. All but twenty-three of the 538 completed the year so that virtually all of the grade

[1] The detailed data of this study are to be found in the M. A. thesis of the junior author: *The Relationship of Ratings on the Stanford Personal Rating Blank to Intelligence, Scholarship and Certain Personality Traits.* 1935. Stanford University Library.

data are based upon a full year's record. The scale was divided into tenths and the check marks in the scale given numerical values. The values skewed to the upper end of the scale, as is often found with such rating scales, with the ranges and averages reported in Table I.

TABLE I

RATING SCALE ITEM DISTRIBUTIONS ON A 10-POINT SCALE

SCALE

Item	Men			Women		
	Mean	Sigma	Range	Mean	Sigma	Range
1. "How do his manners and appearance affect you?"	7.30	.87	4–10	7.51	1.07	2–10
2. "Does he need constant prodding or does he go ahead with his work without being told?"	7.22	1.39	0–10	7.56	1.42	2–10
3. "Does he get others to do what he wishes?"	6.79	1.42	2–10	6.87	1.68	2–10
4. "How does he control his emotions?"	7.18	1.24	1–10	7.28	1.33	2–10
5. "Has he a program with definite purposes in terms of which he distributes his time and energy?"	7.41	1.07	3–10	7.69	1.08	4–10

Using the men's ratings only as an example these means are to be interpreted on the scale as follows: for item 1, the mean is slightly above the behavior description "well liked by others"; for item 2, the mean is slightly above "completes suggested supplementary work"; for item 3, the mean is slightly below "sometimes leads in important affairs"; for item 4, the mean is slightly above "well balanced"; and for item 5, the mean is slightly above "directs energies effectively with fairly definite program". In noting the consistently skewed distribution, where the averages fall one full behavior description interval beyond the "normal" average, it must be remembered that these ratings are all on *admitted* Stanford students, a markedly selective group. It would be strange, indeed, if the distribution were not skewed.

Among both men and women, the highest mean is with reference to the student's "program and purposes", (item 5); the lowest with reference to "leadership", (item 3). Among both men and women the largest sigma and therefore the widest spread of judgment is on "leadership", (item 3). The significance of these differences in behavior item means and sigmas lies in the indication they give of the tendencies of 1076 raters to rate

certain items high and certain items low. In this table "leadership", (item 3) secured the lowest ratings and the greatest range of ratings. This form of behavior is one of the most easily observable in objective fashion of any of the items of the scale.

The correlation of the rating scale items with scholarship (grade point ratio) produced some rather significant results. Table II shows a definite relationship existing between items 2 and 5 and scholarship. These rating scale items for women give higher coefficients than those for men. There is apparently a closer relationship between *all* behavior ratings and scholarship for women than for men, which may mean that appearance and other observable character indices enter more into the grades that are given women than into those given men.

Item 5, "Has a definite program and purpose" predicts freshman scholarship almost as well as does the *College Aptitude Test*. Certainly this item and item 2, "works without prodding", should be given much heavier weighting than the others when considering their relationship to scholarship. The corrections for attenuation are given with a word of apology. Since the reliability of each item of the scale is low (.34 to .45 for men and .34 to .57 for women) the correction formula "steps up" the correlation

TABLE II

THE RELATIONSHIP OF RATING SCALE ITEMS TO FRESHMAN SCHOLARSHIP (GRADE-POINT RATIOS)

Rating Scale Item	Grade Point Ratios vs. Ratings (r)		Corrected for Attenuation		Reliability coefficients of rating scale items (1) (1 vs. 1 rating)	
	Men	Women	Men	Women	Men	Women
1. Appearance and manner	—.00	.09 ± .048			.35 ± .04	.57 ± .04
2. Works without prodding	.31 ± .033	.32 ± .044	.56	.52	.34 ± .04	.43 ± .06
3. Leadership	.09 ± .036	.24 ± .046		.36	.45 ± .04	.49 ± .05
4. Emotional control	.20 ± .035	.28 ± .045	.34	.51	.39 ± .04	.34 ± .06
5. Definite Program	.35 ± .032	.36 ± .042	.55	.64	.45 ± .04	.35 ± .06
Between College Aptitude Test and Grade Point Ratio	.43	.45	.51(2)	.53		

(1) Reliability of grade point ratio over a four year average is .89.
(2) Reliability of College Aptitude Test is .80.

coefficients to a degree that is absurd in a practical sense even though the procedure is statistically justifiable. The reliabilities are considerably lower than those secured by Bradshaw,[1] using 3 vs. 3 ratings with 107 freshman, where the coefficients were: Item 1, .35; Item 2, .72; Item 3, .64; Item 4, .56; Item 5, .66. The inference might be drawn that the reliability coefficients of the ratings reported in this study (1 vs. 1 rating) were lower than they would have been if more ratings had been available. This accounts for the curious anomaly of a corrected coefficient of correlation that is higher than it would have been had the ratings been more reliable (a natural function of the formula for correcting attenuation), although presumably the new correlation would have been higher with more reliable ratings.

Even without correction for attenuation the correlation coefficients between items 2 and 5 and scholarship are high enough to justify their being given serious attention. By referring to Table I, it will be seen that the high correlation between scholarship and Item 5 is *in spite of* the fact that this item has the most restricted range of any of the five items (the highest mean, i.e., the greatest skewing toward the upper end of the range, and a very low sigma). It is well known that a restricted range of distribution tends toward a lower correlation so the fact that item 5 has the highest correlation with scholarship becomes doubly significant in view of the "bunching" around the mean of the ratings on this item. Bradshaw[2] also found that the highest correlation with scholarship was with items 2 and 5 (r's of .50 and .34). Bradshaw's higher coefficient for item 2 may be a factor of his sampling data. He used 107 freshmen (presumably men) as opposed to the 538 of the present study, where the coefficients for men and women are remarkably consistent (.32 for women and .31 for men). It is possible that the relationship between "needs constant prodding" and scholarship is better represented by a coefficient of .31 than by one of .50.

The relationship of the rating scale items to *College Aptitude Test* scores proved to be negligible. Only one rating, item 2 on "works without prodding", was found to have a correlation coefficient of more than four times its probable error, a coefficient of .27 $\pm$ .046 and that only for the women. The coefficient for men on item 2 was only .11 $\pm$ .036. This find-

[1] Bradshaw, Francis F. "The American Council on Education Rating Scale: Its Reliability, Validity and Use". *Archives of Psychology*, No. 119 (1930).

[2] Op. cit.

ing is corroborated by Bradshaw's study[1], with three secondary school ratings, where again the only coefficient more than four times its probable error was on item 2 with a coefficient of $.33 \pm .053$.

The relationship between the rating scale items and scores on the various scales of the Bernreuter Test was also found to be quite low in each instance. When the Bernreuter B2–S scale, "Self-sufficiency", was considered, only two items on the rating scale were found to have correlation coefficients of more than four times their probable error, and those were again true only for the women where item 2 "works without prodding" had a coefficient of $.22 \pm .046$ and item 5, "Has a definite program" had a coefficient of $.25 \pm .046$ with Self-sufficiency. All correlations between the two Bernreuter scales, B1–N "Neurotic tendency" and B3–I "Introversion" and rating scale items were less than four times their probable error.

The B4–D scale of the Bernreuter test, "Dominance," was found to have certain significant and interesting relationships to the rating scale items, *again only for the women.* The correlation coefficients were as follows:

Rating Scale Item	Correlation with B4-D
1. Appearance and manner	$.22 \pm .046$
2. Works without prodding	$.17 \pm .047$
3. Leadership	$.30 \pm .044$
4. Emotional control	$.15 \pm .047$
5. Has definite program	$.19 \pm .047$

Evidently there is some tendency for women who are rated high in appearance and in leadership to score high on the Bernreuter "Dominance" scale.

Bernreuter scores were also correlated with *College Aptitude Test* scores and the tendency earlier described[2] to have B2–S scores associated positively and B4–D scores associated negatively with intelligence was confirmed. Here again *College Aptitude Test* scores had a low positive correlation with B2–S and a low negative with the B4–D scores. The uniformly low, even though statistically significant, correlation coefficients and the uncertain meaning of the Bernreuter scales give any of the tendencies reported in this phase of the study only suggestive value.

In summary, then, there is evidence in this study to indicate the decided value of certain rating scale items in predicting scholarship. When used in

[1] Op. cit.

[2] Wrenn, C. Gilbert, Ferguson, Leonard W., and Kennedy, John L. "Intelligence Level and Personality," *Journal of Social Psychology*, VII (1936), pp. 301–308.

connection with aptitude test scores or other data, allowance should be made for the *differential* relationship of the items to scholarship.

Recommendations for further research with this scale might be made as follows:

1. The differential value of the items in predicting social adjustment or other behavior should be studied.

2. Some of the sex differences found in this study should be analyzed further with particular reference to the consistently higher correlations obtained in this study when correlating the scale items *for women* with other objective data.

3. The value of item 5 in predicting scholarship leads to a question of what is meant by raters when rating a student on his "program" and the possession of "objectives". Are educational objectives and college aims meant? Or do the raters have in mind the possession of broader vocational or life goals, denoting a more integrated personality? An examination of college study programs and vocational choices in relation to ratings might prove profitable.

4. A better measure of reliability of ratings should be obtained, using a complete sampling population as in this study but with varying numbers of ratings.

5. A study of extreme ratings should give insight into the meaning of ratings.

6. Multiple correlation coefficients should be found with varying combinations of ratings, and with ratings and aptitude test scores against freshman scholarship.

AN EVALUATION OF A SECONDARY SCHOOL COURSE IN "CONTEMPORARY PROBLEMS" FROM CERTAIN STATED POINTS OF VIEW

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Editor's note: There is widespread concern over more effective citizenship instructions in and out of school. The author presents the results of an attempt to teach contemporary problems more effectively.

THE PROBLEM

THE current interest in the curriculum has given rise to many new courses of study and programs of instruction. The mere introduction of such courses does not, however, establish their effectiveness. As Barr[1] pointed out recently, it would appear, now that we have these new courses of study, that we should study them carefully in operation. The reasoned guess that these new formulations will improve instruction must not, of course, be accepted as an accomplished fact merely because they appear to be promising. Each new formulation in the field of curriculum construction opens an important field of research for the field worker.

The purpose of the study here reported is to evaluate in operation one of these "newer" curricula. School authorities have for many years emphasized the need of developing in students the ability to read and think effectively about contemporary social issues, to observe and analyze the functions of government and other social institutions, and above all to acquire habit and skill in critical evaluation of individual and group practice. That this need has been sensed to some extent is evidenced by the inclusion of the traditional "current events" day periodically set aside in various social studies courses for this purpose. Valuable as these current events days are, they are not wholly adequate. The course of "Contemporary Problems" here reported upon was developed in the hope that a more adequate method of meeting the needs of better citizenship training might be designed.

PROCEDURE

In order to find out whether a course in Contemporary Problems developed a greater understanding of contemporary affairs and was more effective in developing certain attitudes than did a single day a week devoted to

[1] Barr, A. S., "Some Problems of Curriculum Making", *Journal of Educational Research*, XXX (1937), p. 358.

current events, a control group experiment was undertaken. Two classes of twenty pupils each were matched on the basis of mental age, intelligence quotient, reading, and pre-test on their understanding of contemporary affairs as shown in Table I. The control group was taught in the traditional manner which consisted in setting aside from the social studies course one forty-five minute period weekly for the study of "current events". The major emphasis during this period was on the reporting of current events, per se, with little emphasis upon study methods and fact finding. The procedure in the traditionally taught course in this investigation thus was the regular course in citizenship four days a week, with one class period each week devoted to current events.

The "Contemporary Problems"[2] class met daily for forty-five minutes and devoted the full class period to the study of contemporary problems. Both the traditional and experimental procedures required pupils to study outside of the class meetings.

Both procedures recognized the following educational objectives:

1. to teach factual information regarding current happenings.
2. to establish attitudes favorable to social betterment.
3. to encourage pupils to form independent judgments.
4. to establish an out-of-school interest in contemporary social, economic, and political problems.

The experimental group approached "current events", however, from a contemporary *problem* point of view. Events became a chain of happenings related to and growing from a present-day social, economic, or political problem. Factual information regarding current happenings was a necessary tool for understanding and interpreting problems. Groups of students worked cooperatively on the same problem. The three problems used in the first half of the course were:

1. Labor Problems in United States.
2. The Supreme Court Issue.
3. The Chinese–Japanese War.

While only certain students were responsible for an intensive study of a single one of these three problems, all students were held responsible for following current happenings that transpired in other areas.

[2] The "Contemporary Problems" course was taught by Mr. Douglas Tompkins, formerly social science instructor in Ruthven High School, Ruthven, Iowa.

By studying a single problem intensively it was hoped that students might become conscious of the meanings, sequence, causes, and effects of events as they related to a contemporary problem. It was hoped that they might come to see that knowledge of the historical background, the geographic, economic, and social factors was necessary for interpretation and understanding. This problem approach through such integration gave, it is hoped, meaning to courses which to students had previously seemed unrelated. Students were at all times encouraged to form independent judgments which they could support by facts. The problem approach with its accompanying problem solving technique encouraged students to make independent judgments.

The experimental group did not, obviously, use a text book but was encouraged to make use of any material which they could find that was of value in interpreting current happenings. Many current magazines, papers, books, motion picture news reels, the March of Time, and the radio were used.

The experimental period extended from October 1, 1937, to May 1, 1938.

The experimental group consisted of twenty students, ten boys and ten girls, who were paired with a control group of twenty students, half of whom were girls and half boys. Boys were paired with boys and girls with girls in all but two of the twenty cases. The control[3] group was taught by the "conventional" method. Table I indicates the equating factors employed and the comparison of the control and experimental groups on these factors.[4] The mental ages of pupils were secured by the "Henmon–Nelson Tests of Mental Ability". The reading scores were obtained by the "Iowa Silent Reading Test —Advanced Test" for High Schools and Colleges. The measure of knowledge of contemporary affairs was determined by the administration of the 1937 Iowa Every-Pupil Test of "Understanding of Contemporary Affairs". An examination of Table I reveals that there were no significant differences

[3] The control group was made available through Supt. A. R. Newell and Dr. John Greenlee, Principal of Emmetsburg High School, Emmetsburg, Iowa.

[4] The following formula reported by A. S. Barr, and C. N. Mills, "A Short Method of Calculating the Standard Error of the Difference of the Means of Paired Items," *Journal of Experimental Education*, (March, 1937) was employed in equating groups:

$$\sigma M_a - M_b = \frac{1}{N}\sqrt{\Sigma(b-a)^2 - \frac{[\Sigma(b-a)]^2}{N}}$$

TABLE I

EQUATING OF CONTROL AND EXPERIMENTAL GROUPS

Factors	Controls		Experimental		Diff.	S.E. diff.	C.R.
	Mean	S.D. dist	Mean	S.D. dist.			
Mental Age (mo.)	198.7	16.0	198.0	17.3	.7	.7	1.0
Intelligence Quotient	103.0	8.2	103.0	7.9	.0	.35	.0
Reading	108.8	31.9	99.4	29.9	9.4	5.9	1.5
Contemporary Affairs	16.0	11.1	15.9	9.9	.1	2.7	.04

between the control and experimental groups at the beginning of the experiment on any of the four factors used for equating.

The teachers of both groups were experienced teachers and graduates of the same institution. Both were majors in social science and holders of Masters degrees, and presumably of equal ability; although it is always possible that some important differences in the ability of these teachers may have escaped observation.

The relative effectiveness of the two methods of teaching was measured through the administration of a series of tests before and after instruction. Eight of the Thurstone scales for "Measurement of the Social Attitudes", Form A, were administered as initial tests in September, 1937, to both groups. Form B of these same scales was administered as a final test in May, 1938.

The scales used were:

1. Attitude Toward Treatment of Criminals
2. Attitude Toward Censorship
3. Attitude Toward the Chinese
4. Attitude Toward Communism
5. Attitude Toward the Constitution of the United States
6. Attitude Toward the Germans
7. Patriotism
8. Attitude Toward War

The 1937 form of the Iowa-Every Pupil Test of Understanding of Contemporary Affairs was given in September, 1937, and the 1938 form was administered in May, 1938. The results on these tests are presented in Table II.

INTERPRETATION OF RESULTS

Forms A and B of the Thurstone Attitude Scale provided a means of measuring attitude change during the experimental period. In none of the eight attitudes measured in the fall was there any extreme position shown.

TABLE II

CHANGES MADE ON THURSTONE ATTITUDE SCALES

Attitude Scale	Group	Mean Form A (Initial)	Mean Form B (Final)	Mean Change between Form A and B	Critical Ratio
Treatment of Criminals	Control	6.1	7.2	1.2	
	Experimental	5.9	6.5	.65	1.6
	Control	5.5	5.6	.19	
Censorship	Experimental	5.5	5.4	— .09	.37
	Control	5.8	5.5	— .33	
Chinese	Experimental	6.0	6.0	— .01	1.0
	Control	4.8	4.7	— .18	
Communism	Experimental	4.7	4.8	.17	.99
	Control	6.1	5.9	— .05	
Constitution	Experimental	5.9	6.3	.4	2.2
	Control	6.3	5.8	— .52	
Germans	Experimental	6.8	7.0	.2	2.4
	Control	7.3	8.1	.83	
Patriotism	Experimental	6.6	6.5	— .25	3.1
	Control	6.1	5.4	— .68	
War	Experimental	5.8	4.9	— .99	1.3

In all cases the attitudes were either of a neutral nature or showed only slight tendency one direction or the other from neutrality. This statement is based upon an interpretation of the mean scores as set up by Thurstone for these attitude scales. This rather neutral position permits several possible descriptions of both the control and experimental groups. It may possibly mean that the subjects were indifferent toward the areas measured, that they were relatively tolerant, or that they were relatively unbiased.

From a study of the change scores it would appear that there were no appreciable differences between the control and experimental groups in their shifts in attitudes toward Censorship, Chinese, and Communism. In the shift in attitudes toward the Treatment of Criminals and War the differences between the experimental and control groups are greater than for those for Censorship, Chinese, and Communism but not statistically significant. The differences in the shift in attitudes toward the Constitution and Germans is statistically significant if we accept a critical ratio of 2 as statistically significant. Here the chances are about 99 in 100 that the differences are statistically significant. The only difference between the experimental and control groups showing a critical ratio of 3 or over is found in the case of Patriotism.

The results for the control and experimental groups on the 1938 Iowa Every Pupil Test of Understanding Contemporary Affairs are reported in Table III. The control group made a mean score of 40.3 on this test and the experimental group made a mean score of 63.2, with a critical ratio of 8.7. It will be recalled that the two groups were equated on an equivalent form of this test at the beginning of the school year.

TABLE III

COMPARATIVE SCORES ON 1938 TEST OF UNDERSTANDING CONTEMPORARY AFFAIRS

Group	Mean Final Test Score	Difference	S. E. Diff.	Critical Ratio
Control	40.3			
Experimental	63.2	22.9	2.6	8.7

Further evidence of the superiority of the experimental group in understanding contemporary affairs is found in Table IV, which shows percentile rankings of the control and experimental groups on the initial and final tests. These rankings are based upon the performance of 4,947 Iowa High School students of the same grade level on the same test. Both groups fell at the 38th percentile on the initial test. During the experimental period the control group lost 3 percentiles, while the experimental group gained 53 percentiles.

TABLE IV

PERCENTILE RANKING OF CONTROL AND EXPERIMENTAL GROUP ON INITIAL AND FINAL TEST OF UNDERSTANDING CONTEMPORARY AFFAIRS

Groups	Percentile Rank Final Test	Percentile Rank Initial Test	Percentile Change
Control	35	38	3
Experimental	91	38	53

This comparative ranking is shown graphically on Chart I.

Obviously, the emphasis placed on the understanding of contemporary affairs in the "Contemporary Problems" course shows a marked difference in favor of the experimental group.

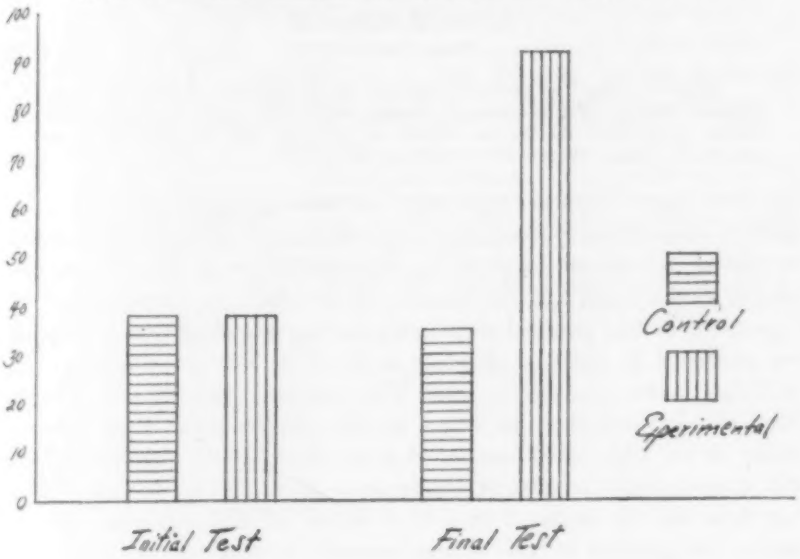
CONCLUSIONS

In general the "Contemporary Problems" approach to teaching as applied in this investigation seemed to give results superior to the traditional method for the outcomes measured and for the conditions of the investigation. The following conclusions seem warranted:

1. Out of eight attitudes measured by the Thurstone scales only three changes approached statistical significance.

CHART I

MEAN PERCENTILE CHANGES ON CONTEMPORARY AFFAIRS TEST



2. The experimental group taught through the "Contemporary Problems" method showed a marked superiority over the control group in their understanding of contemporary affairs as measured by the 1938 Iowa Every-Pupil Test of "Understanding Contemporary Affairs". The critical ratio was 8.1 in favor of the experimental group.

3. The mean score of the experimental group on the final test fell at the 91st percentile when compared with the performance of 4,947 Iowa high school students of the same level on the 1938 Iowa Every-Pupil Test of "Understanding Contemporary Affairs". The mean score of the control group fell at the 35th percentile. The control group lost 3 percentile ranks in mean score between the initial and final test, while the experimental group gained 53 percentile ranks from the initial to final test.

4. Subjective observation indicated that such a "Contemporary Problems" course will create student interest in current happenings, inspire an investigative attitude, and have a carry-over effect.

PERSON-PERSON INTERACTION BETWEEN TEACHERS AND PUPILS AND TEACHING EFFECTIVENESS[1]

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Editor's note: The current limitation of the training of teachers to the technical aspects of education has shown itself to be quite inadequate. The author emphasizes the human aspects of teaching and the importance of person to person interactions of teachers and pupils.

THE place of teacher-pupil relations on a person-to-person level has received little attention from either psychologists or educators. This is true in spite of the obvious importance of this relationship in regard to the personality development and the learning of the child. In recognition of the importance of this personal relationship in any school situation the writer has attempted to make an objective study of it. The major question, for which an answer was desired, was: What influence does the person-person interaction between the high school teacher and the pupils have upon the ability of the high school teacher to teach these pupils? Supplementary to this major problem an attempt was made to answer several other questions, but these will be discussed in a later section of this paper. In order to answer the question at hand it was necessary to develop some method of rating or measuring the person-person interaction between teachers and pupils.

The method of constructing and validating the scale (shown in Scale I) is similar in many respects to those used in the development of attitude scales, but there are certain modifications that should be noted. The scale is not merely another attitude scale, but rather one to measure person-person interaction. The method used is that of having one of the interactors respond to certain statements which have previously been evaluated in regard to the degree of interaction which each indicates. Rather than to follow the laborious technique used by Thurstone[2] and his associates, I used the simpler technique devised by Likert.[3]

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[1] This study was made under the direction of Dr. Kimball Young. Acknowledgment is due him for assistance in many ways.

[2] Thurstone, L. L. "Attitudes Can Be Measured," *American Journal of Sociology*, XXXIII (1928), pp. 598–653, and other sources.

[3] Likert, Rensis, "A Technique for the Measurement of Attitudes," *Archives of Psychology*, No. 140, (June, 1932), pp. 6–42.

Scale I

Rating Scale for Person-Person Interaction Applied to Teacher-Pupil Relationships

Teacher_____ Approx. Age_____

Pupil Data: Grade_____ Age_____ Sex: Boy, Girl (encircle correct one)
How many years have you known this teacher? _____
Have you had classes under this teacher before the present one?_____
If so, how many?_____

Explanation: Below you will find nine statements to be completed by checking (√) one of five possible completions. You are asked to check the one completion for each statement that most nearly described your relationship with the teacher indicated. This information will in no way affect your grade or the teacher's attitude toward you, for you *do not sign your name.* This is in no way a test of your ability. Please be as accurate as you can. Check (√) only one completion for each of the nine statements. Check (√) the completion that most nearly indicate your relationship to this teacher. Read each statement carefully.

EXAMPLE OF HOW TO CHECK

0. In my Association with this teacher,
   a. I have come to hate her.
   b. I get along with her O. K.
   c. She is perfect.
   √ d. She is all right.
   e. I would rather not be around her.

BEGIN HERE

1. When speaking about this teacher to my close friends and schoolmates, I speak of her* by,
   a. *Pleasantly* using the first name or a pleasing nickname.
   b *Indifferently* using the last name with Miss or Mrs., such as Miss Jones.
   c. *Pleasantly* using the last name alone.
   d. An *unpleasant* nickname such as old lady so and so.
   e. *Unpleasantly* using the last name alone.

2. When I have a personal problem to solve, I
   a. Do not go to this teacher because she wouldn't understand.
   b. *Often* go to this teacher for advice.
   c. Would be undecided whether or not to go to her for advice.
   d. Do not go to her because she would make fun of or ridicule me.
   e. *Occasionally* go to this teacher for advice.

3. In my relations with this teacher, I
   a. Am afraid to talk to her, so I never do.
   b. *Occasionally* have friendly chats with her.
   c. Feel uncomfortable when talking to her.
   d. *Often* have friendly chats with her.
   e. Talk to her only when convenient or necessary.

* This form using the feminine pronouns was used only in rating women teachers. Masculine pronouns were used on scales rating men. I am indebted to Mr. John Teter, Milwaukee State Teachers' College for the suggestion of this device.

4. When in the presence of this teacher,
   a. Her company is neither pleasant nor unpleasant.
   b. I *always* feel at ease and enjoy her company.
   c. I am ill at ease, uncomfortable, or afraid.
   d. I *usually* enjoy her company.
   e. I am frequently irritated by her company.

5. When I meet this teacher on the street, she
   a. Is *usually* friendly.
   b. Speaks only when it is necessary.
   c. Speaks casually.
   d. "High-hats" me.
   e. Is *always* friendly.

6. My relationship with this teacher has caused me to,
   a. Want to be like her.
   b. Sometimes try to imitate her in dress, manner, or other traits.
   c. Be indifferent toward her.
   d. *Occasionally* mock or ridicule her.
   e. *Often* mock or ridicule her.

7. When in her presence, this teacher,
   a. Makes me feel that I am on a *much* lower social plane than she is.
   b. Makes me feel that I am on a *slightly* lower social plane than she is.
   c. Accepts me on an equal social plane and associates with me freely.
   d. Tries to accept me as an equal, but does not always do so.
   e. Accepts me as an equal, but does not associate with me freely.

8. When speaking *to* this teacher *outside of school,* I
   a. *Always* use her first name, last name, or a pleasant nickname as I do my companion or pals.
   b. Use Miss or Mrs., as Miss Jones, in a friendly, informal manner.
   c. *Often* use her first name, last name, or a pleasant nickname as I do my companions or pals.
   d. Use Miss or Mrs., as Miss Jones, in a formal, business-like manner.
   e. Use Miss or Mrs., as Miss Jones, because I would be afraid to speak to her any other way.

9. In my relations with this teacher, I find her,
   a. *Moderately* congenial and sympathetic.
   b. *Seldom* congenial and sympathetic.
   c. *Never* congenial and sympathetic.
   d. *Usually* congenial and sympathetic.
   e. *Always* congenial and sympathetic

Thus the scale is composed of a series of major statements each with five possible completions, and with each completion having a value on a five-point scale. However, contrary to the practice of Likert, and Likert and Murphy,[4] these values were not arbitrarily assigned to the statements, but

[4] Murphy, Gardner, and Likert, Rensis. *Public Opinion and Individual* (Harpers Brothers, New York, 1938); also Likert, Rensis, *op. cit.*

were determined by a number of rankings as later described. The amount of labor involved in ranking the items was materially reduced from that required in the Thurstone method by using a modification of a method suggested by Seashore and Hevner.[5]

The numbers one to five were placed before each completion for the convenience of the individuals who ranked the items. Copies of these statements in this form were presented to a group of graduate students doing research in social psychology. They were asked to rank the completion statements on a scale of one to five with five indicating the "highest" degree and one the "lowest" degree of person-person interaction. Following this, the statements upon which the rankings did not agree were revised in accordance with the suggestions given by the raters. The revised statements were presented to another group, largely high school teachers, to be ranked and criticized. This procedure was continued until a high percentage of agreement was obtained upon the evaluation of each item in the scale.

After the final modifications the various completions for each statement were ranked by 52 people using the ranking device described above. Twenty-four of these subjects were high school students comparable to the group who rated their teachers by the scale. The remaining twenty-eight consisted of public school teachers, graduates, former teachers, and one university professor. The validity of the scale as a measure of person-person interaction between teachers and pupils is based on the agreement in the rankings or evaluations of the various completions as they are found in the scale as shown in its final form. From 77% to 100% of the raters agreed on the rank to be given each of the completion items.

The values thus given to the various completion statements by the majority of the people ranking them became the standard value which the statement carried in the rating of the person-person interaction. Thus the scale consists of the nine major statements descriptive of different situations and concerned with various phases of person-person relationship with five possible completions to each statement. These five completions have values ranging from one to five. When used to measure person-person interaction, the student checks one completion for each of the nine statements, thus giving a rating to nine different phases of the relationship between that

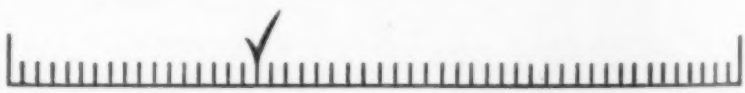
[5] Seashore, R. H., and Hevner, K. "Time Saving Device for the Construction of Attitude Scales," *Journal of Social Psychology*, IV (1933), pp. 366–388.

student and teacher. The reliability of the scale was checked by obtaining a second set of ratings for a given teacher, after a two weeks interval. The high percentage of agreement obtained indicated that the scale is presumably valid.

As a measure of the ability of the teachers as teachers, a slight modification of the Purdue Rating Scale for Instructors was used. The scale as used here, shown in Scale II, is different from the original in that two items were added at the end to make the scale more applicable to high school teachers, and the scale line was reduced from 100 to 50 units. The ratings of the teachers on this scale were made by their pupils. These pupil ratings were used instead of ratings made by administrators or other teachers for several reasons: (1) It was possible to get a considerable number of such ratings of each teacher and it was believed that the mean of a series of ratings by a number of people—in this case students—would be a better judgment of the teacher's true classroom ability than would a *single* rating by an administrator. (2) The use of student ratings made it possible to compare the ratings of teaching ability with ratings of teacher-pupil interaction on an individual student basis. (3) Since it is doubtful that a teacher can be effective in instructing a pupil who believes him to be a poor instructor, it is probable that students' ratings of teachers are more valid than those of administrators. A comparison of such student ratings with administrators' ratings of the same teachers will be found below.

THE PURDUE RATING SCALE FOR INSTRUCTORS

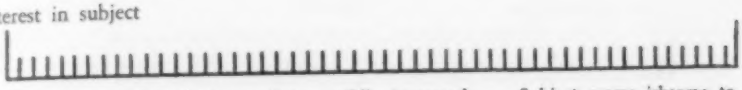
Note to students: Following is a list of qualities that, taken together, tend to make any instructor the sort of instructor that he is. Of course, no one is ideal in all of these qualities, but some approach this ideal to a much greater extent than others. You are asked to rate your instructor on the indicated qualities by making a check (V) on the line at the point which most nearly described him with reference to the quality you are considering. For example, under Interest in Subject if you think your instructor is not as enthusiastic about his subject as he should be, but is usually more than mildly interested place the check of the scale thus:



Always appears full of his subject — Seems mildly interested — Subject seems irksome to him

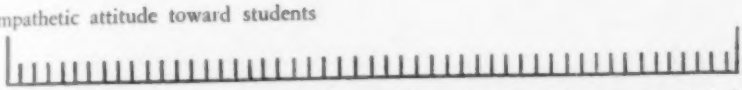
This rating is entirely impersonal. Do not sign your name or make any other mark on the paper which would serve to identify the rater. Be sure to put your check on the line where you think it should be to express your judgment of the instructor.

1. Interest in subject



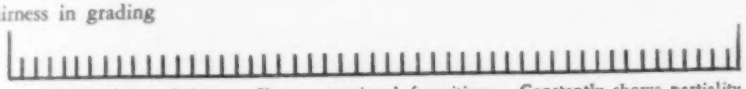
Always appears full of his subject | Seems mildly interested | Subject seems irksome to him

2. Sympathetic attitude toward students



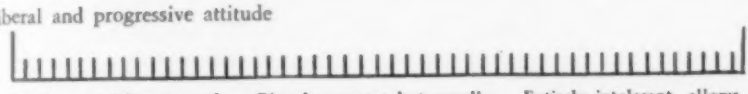
Always courteous and considerate | Tries to be considerate but finds it difficult | Entirely unsympathetic and inconsiderate

3. Fairness in grading



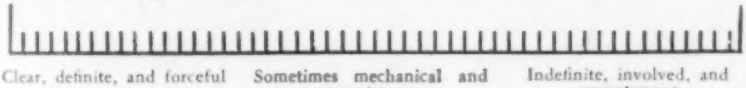
Absolutely fair and impartial to all | Shows occasional favoritism | Constantly shows partiality

4. Liberal and progressive attitude



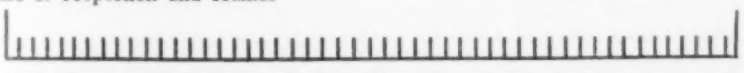
Welcomes differences of opinion | Biased on some but usually tolerant | Entirely intolerant, allows no contradiction

5. Presentation of subject matter



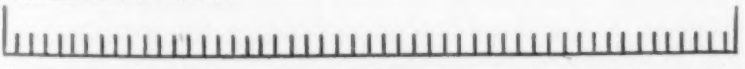
Clear, definite, and forceful | Sometimes mechanical and monotonous | Indefinite, involved, and monotonous

6. Sense of Proportion and Humor



Always keeps proper balance; not overcritical or oversensitive | Fairly well-balanced | Over-serious; no sense of relative values

7. Self-reliance and Confidence

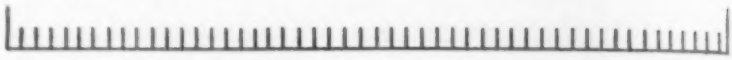


Always sure of himself; meets difficulties with poise | Fairly self-confident; occasionally disconcerted | Hesitant, timid, uncertain

8. Personal Peculiarities

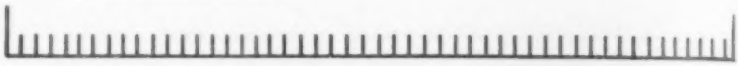
Wholly free from annoying mannerisms | Moderately free from objectionable peculiarities | Constantly exhibits irritating mannerisms

9. Personal Appearance



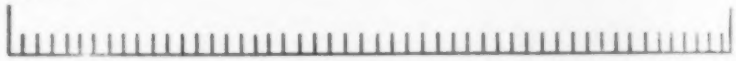
Always well-groomed; clothes neat and clean | Usually somewhat untidy; little attention to appearance | Slovenly clothes; untidy and illkept

10. Stimulating Intellectual Curiosity



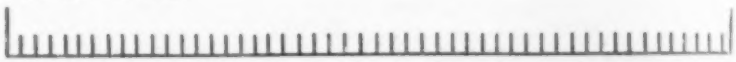
Inspires students to independent effort; creates desire for investigation | Occasionally inspiring; creates mild interest | Destroys interest in subject; makes work repulsive

11. Discipline



Always good, conducive to best learning conditions | Fairly good | Always ineffective

12. Attitude toward Work



Always pleasant and cheerful | Tries to be pleasant; sometimes finds it difficult | Always unpleasant, grouchy

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The procedure in getting the data was as follows: The writer went into the classroom for ten or fifteen minutes of a class period, and personally administered the scales to the students. It was explained that the teacher would not see the ratings and that they would not affect either his or the teacher's academic status in any way. Stress was laid on the point that since the teachers would not see the papers and since the students did not sign their names, it was useless for them to exaggerate their rating in either direction. This procedure tended to minimize the probability of either positive or negative "halo" ratings.

The ratings were obtained from five Indiana High Schools. The size, percent rural, and number of teachers rated in each is indicated in the table on the following page:

The number of ratings per teacher varies; the largest number per teacher is 57 and the smallest number is 12. The mean number of ratings

TABLE I

SHOWING THE ENROLLMENT, PERCENT RURAL, NUMBER OF TEACHERS, AND NUMBER OF TEACHERS FOR WHOM RATINGS WERE OBTAINED IN FIVE INDIANA HIGH SCHOOLS

High School	Enrollment	% Rural	Total No. of teachers	No. of teachers rate
A	180	50	10	10
B	90	100	4	4
C	350	10	14	13
D	95	100	4	4
E	1800	0	55	8
Total				39

per teacher is 29.2. The total number of student ratings on each scale is 1139.

As stated above, it was desired to answer the question: Does a student who has a high degree of person-person interaction with a given teacher, as measured by the Person-Person Scale, also rate that teacher high as an instructor? To answer this question, the mean of the various student ratings of a given teacher was calculated for each scale. Thus, the mean of the nine separate values on the Person-Person Scale was determined from the ratings of each student; and the same was computed from the twelve separate values on the Purdue Scale. The Pearsonian coefficient of correlation was then calculated to determine the relationship between the mean ratings of each teacher on the Person-Person Scale and the mean ratings on the Purdue Scale.

Such coefficients were determined for the ratings of 37 different teachers. Although the major portion of the values is not high, it is significant to note that all are positive values ranging from those of no significance to some that indicate a definite relationship. Of the 37 values calculated, nine are $+.60$ or higher; 13 are $+.50$ or higher. It is impossible to say whether a larger sampling in each case would increase or decrease the relationship indicated. However this limited study indicates that there is a relationship between the person-person interaction of an individual student and teacher, and that pupil's opinion of the teacher as an instructor.

A much more valid measure of this relationship is obtained by comparing single mean ratings on each scale for each teacher. This particular rating for a given teacher on each scale was obtained by averaging the mean

ratings of all of that teacher's students. Thus we have a single index for each teacher representing the person-person interaction between the teacher and her various pupils. Also in the same manner we calculate a single rating of the teacher as an instructor; that is, we get the mean of the ratings made by her various students. The ratings thus obtained should provide a rather valid rating of the teacher on each scale.

The sample of students making ratings of each teacher was obtained by selecting classes at random, and all the pupils in the classroom regardless of grades, intelligence, or sex, made the ratings. In no case had the pupils in the class been selected on the basis of intelligence or other measure of ability. In 21 of the 39 instructors rated, the ratings were made by two different classroom groups taught by the teacher. In the other 18 cases the ratings were made by all the members in one classroom group. Thus the mean of the various single student ratings is likely as reliable a rating of the teacher on the scales used as could be obtained short of getting ratings by all of the students taught by the teacher in question.

By taking the mean of the various single student ratings of each teacher, the positive and negative "halo"[6] effects tend to counteract each other. Therefore, the mean of the several single student ratings is certainly a better measure of the teacher, both in regard to the degree of person-person interaction and the teacher's ability as an instructor, than a single rating by an individual on each scale would be. The question to answer then becomes: Are teachers who have a high degree of person-person interaction with their students on the average also rated high as instructors?

This relationship was determined by calculating the Pearsonian coefficient of correlation from the mean ratings on the two scales for the 39 teachers for whom ratings were secured. The results of the calculation yielded an r of $+ .639 \mp .16$.[7] This result would indicate that teachers who have a high degree of person-person interaction with their pupils also tend to be rated high as instructors by their pupils.

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[6] By negative "halo" effect I mean the tendency of some students to rate their teachers lower than they should be because of a grudge resulting from a recent grade of disciplinary measure forced upon them.

[7] This standard error assumes that the teachers studied are a sampling of an infinite universe.The writer uses this only as an indication of the range of the values of r if ratings were made of these teachers an infinite number of times, not as an indication of the range of r for an infinite number of teachers.

Such a finding signifies that teachers who develop a higher degree of personal relationship with their pupils are more effective teachers in the minds of the pupils themselves. The question immediately arises whether or not the student ratings of teachers' ability as instructors are valid as measures of that ability. Several studies have shown that such ratings are a reliable and valuable means of measuring a teacher's ability.[8] Certainly some importance should be attached to the student's opinions of a teacher in the consideration of the latter's ability as an instructor because, as stated previously, the opinion which a student has of his instructor is real to him and will affect his learning under this teacher's direction regardless of what the opinion of others may be.

Although some possibilities of inaccuracy exist in the rating of teachers as instructors, they probably have very little effect on the total results of the study, because the use of a mean rating for each teacher based on the ratings of various students minimized the effect of a single rating on the results. (See above) It is not likely that any inaccuracies of any consequence occurred in the person-person ratings. The nature of the scale made it difficult for the student either to over-rate or under-rate his relationship with the teacher, for the statements are not arranged on the scale in such a way that the student can easily tell which response indicates a high rating and which indicates a low rating. Thus it seems safe to conclude that the calculations of the relationship existing between the person-person interaction of teachers and pupils and the ratings of teachers as teachers, when based on the mean ratings of the several students, are valid and true of this group of teachers.

Other factors which were studied are: (1) the effect of the age of the teachers and the age and classification of the students, (2) the effect of the sex of teachers and pupils, (3) the effect of the size and rural-urban condition of the schools, (4) the comparison of the students' ratings of the teachers on the Purdue Scale with the ratings of these teachers made by their administrators, and finally, (5) a comparison of the teachers' mean ratings on the various items in each scale.

The first of these phases is the effect of age or scholastic classification of the students on the ratings of the teachers on both scales. From the

[8] cf. Remers, H. H., "Reliability and 'Halo' Effect of High School and College Students' Judgments of Their Teacher", *Jr. of Applied Psychology*, XVIII, (Oct. 1939), pp. 619–630; also Stalnacker, J. M. and Remmers, H. H., "Can Students Discriminate Traits Associated with Success in Teaching", *Jr. of Applied Psychology*, XII (December, 1929), pp. 605ff.

analysis of the ratings of five teachers we find, with one exception, the ratings by the upper classes are slightly higher on both scales than the ratings by the freshmen and sophomores. However, the differences are so small that conclusions based on these figures should be made with strict reservation.

The next phase of the study which we wish to mention is the effect of the age of the teachers on the ratings by the students. For this analysis, I divided both the women and men teachers into two age groups. For the women the division point was placed at thirty years of age. Age thirty was chosen because the consensus of opinion among people who have studied the problem of the single woman is that after thirty the single woman is recognized as one whose probability of marriage is much diminished. Thus one group might be said to be those who are expected to stay in teaching for some time and probably remain unmarried. The other group might be said to be those who still have good prospects of marriage.

The results indicate that the younger women teachers show somewhat higher person-person interaction with their students and very slightly higher ratings as teachers. The mean ratings of the younger women were 4.05 and 38.72 on the Person-Person and Purdue Scale respectively compared with mean ratings of 3.68 and 37.24 for the older women. The difference on the Purdue Scale is insignificant, but the difference in the person-person interaction ratings might at least indicate some possibilities for further study. If this result may be taken as indicative, it might be worth while to ask if women teachers tend to set themselves apart from others or lose contact with their students as they pass the age of higher marriage probability?

The question of setting a dividing line between the older and younger men teachers was more difficult. The following question was asked of a number of graduate students: If you were to divide men high school teachers into two classes—older and younger—at what age would you make the division? Although there was some disagreement, the majority of fifteen people suggested ages from 35-38. Among the men studied, only one was in the interval, 35-38; his age was 38. This made the group easily divided at the point chosen which was 37.

The results of this analysis show no significant difference between the ratings for the younger and older men on either scale. The mean ratings for the younger men was 3.94 in the Person-Person Scale and 38.73 on the Purdue Scale. The comparable ratings for the older men were 3.89 and 38.43.

The difference in sex of the teachers made no appreciable difference in the ratings on either the person-person interaction of the teachers and pupils or upon the ratings of the teachers as teachers. The mean ratings on the former were 3.92 for men and 3.88 for women. On the latter, the ratings were 38.59 for the men and 38.03 for women.

In analysing the effect of the sex of the students on the ratings, an effort was made to obtain ratings in which other variables such as age of students and period of acquaintance, were held constant. On only five teachers was it possible to get data of this sort. On the basis of this group one would conclude that the sex difference of the students makes no significant difference in the ratings of the teachers either as teachers or in regard to person-person interaction. However, in cases of women teachers the girls rated the teachers slightly higher on both scales. Men teachers were rated higher on the Person-Person Scale by the boys. Although these differences were very slight in this limited study, it is suggested that girls have a higher degree person-person interaction with women teachers and boys a similarly higher degree of interaction with men teachers.

The effect of the size of the school cannot be separated from the effect of the rural-urban condition because the smaller schools are also the rural schools and the larger schools are urban. The schools were divided into four classes as previously indicated. The results are shown in Table II below.

One notes from the table that the rural and rural-urban teachers show a slightly higher degree of interaction with their students than do the urban teachers. The greatest difference, however, is seen in the large urban school

TABLE II

SHOWING MEAN RATINGS OF TEACHERS ON PERSON-PERSON INTERACTION AND PURDUE SCALES IN FIVE INDIANA HIGH SCHOOLS, CLASSIFIED ACCORDING TO RURAL-URBAN CONDITION AND SIZE

Classification of schools	Strictly Rural, Less than 100 Enrollment	Rural-Urban, 180 Enrollment	Largely Urban, 350 Enrollment	Strictly Urban, 1800 Enrollment
Mean Ratings of Teachers on Person-Person Interaction Scale	3.97	3.975	3.90	3.73
Mean rating of Teachers as Instructors by their Students on Purdue Scale	38.17	37.87	38.35	39.74

where the person-person ratings are considerably lower than in any of the other schools. This may possibly be due to an error in sampling since the status of School E is based on ratings of eight teachers out of a total of about fifty. The standings for the other schools are based on the returns for all of the teachers in each school. Where the person-person ratings are lower for teachers in the large urban school, the reverse is true of the judgments of the teachers as teachers. In fact, it will be noted that there is a perfect negative rank correlation between the mean ratings of the teachers on the two scales when compared by these classes. Realizing the possibility of a sampling error in School E, one hesitates to suggest conclusions. But from the evidence here shown, it would seem that among the five schools studied, the larger schools show a slightly lower degree of person-person interaction than the smaller ones and that students in the larger or urban school have a higher regard for their teachers as teachers. This latter may be due to the practice of the larger urban schools employing only experienced teachers who have proved their ability in the smaller schools.

Another important phase of the analysis concerns a comparison of the students' ratings of the teachers as instructors and the ratings of the same teachers on the same scale by school administrators. Also, a comparison of ratings by different administrators was made. For all the teachers in High Schools A and B, except the principals, two administrators' ratings were obtained. One was the principal's and the other was the superintendent's. In eleven out of twelve teachers for whom two were obtained, the principals who were in constant daily contact with the teachers, rated them higher than the superintendent who had only occasional contacts with the teachers. This might be due to several factors, but it suggests the influence of the "halo" effect upon the judgment of the principals. This disagreement in ratings by the administrators led to a further comparison of the two administrators by checking the correlation between the ratings of the two administrators. It was + .245. This lack of more definite agreement between administrators which is supported by other studies leads one to question the validity of administrators' ratings of teachers.

The students' ratings on the Purdue Scale were compared to the ratings of only one administrator, since there were two ratings for only twelve of the teachers. Comparable administrator ratings were available for 33 teachers. In 22 of the 33 cases those of the administrator were higher than the mean rating of the students. Of the eleven cases where the administrators' judg-

ments were lower, seven were made by the Principal of the large School E who had less daily contact with his teachers than the other executives. This seems to indicate again the persistence of a "halo" effect in ratings by administrators who are in close daily contact with their teachers. Further analysis showed that there was no correlation between the mean student ratings and those of the administrators. Since the Pearsonian coefficient of correlation was only — .078, one asks, which ratings are more nearly correct for the teachers involved? For several reasons the writer does not believe that it is safe to make the common conclusion that the students' ratings are the ones that are incorrect. (1) We have noted above that administrators do not agree in rating the same teacher. (2) We note the persistent influence of the "halo" effect on the administrator's ratings where the administrator is in close contact with the teachers. (3) The student ratings are a mean of the ratings by a number of students. The administrator's rating, on the other hand, is the judgment of a single person. The correlation between the mean student ratings and the mean of the two administrators' ratings in the twelve cases where two such ratings were available is + .631, which indicates much closer agreement than that between mean student ratings and a single administrator. Further, it seems to the writer that the fact that the students are in constant observation of the teacher in action would make them more capable of judging the teacher's ability. At least, the opinion of the students is much more important in the actual learning of the students than the opinion of the administrator could possibly be, for if a student thinks of the teacher as a poor teacher, his ability to teach that student is going to be affected regardless of how good the administrator may think this particular teacher to be.

Certainly the results here are suggestive of further study on the question. If one could obtain ratings on a group of teachers from several administrators or supervisors acquainted with their work, this should provide a more accurate judgment of their true ability than a single rating. How such a rating would compare with the mean of student ratings remains a subject for further investigation.

Finally an analysis of the differences in the ratings on the various items of each scale was made. The purpose of this was to note whether or not this group of 39 teachers rated significantly higher on some items in either scale than on other items of it. The mean of each teacher's ratings

on each item was calculated and then the mean of these 39 mean ratings on each item was determined. Thus a single mean on each item in both scales is obtained for the group of 39 teachers.

On the Person-Person Scale the highest mean rating was on item five, which is concerned with the greeting of the student by the teacher when they meet on the street. The lowest mean rating is on item eight which is concerned with the name or title with which the teacher is addressed by the student. The high and low ratings are 4.54 and 3.32 respectively. The differences between the rating of men and women on the various items are in all cases small and insignificant. Although no important differences are noted on the items of the Person-Person Scale in this preliminary study, they do suggest the need for further study based on larger samples.

The highest mean rating on the Purdue Scale was on item nine which is the rating of personal appearance. A rating of 43.91 indicates that students in this group feel that their teachers are properly dressed and make a good appearance in most cases. The item on which this group of teachers rated lowest in this rating of their ability as instructors was item six. This is concerned with the teacher's sense of humor or proportion. This is an interesting bit of information and might be of some helpfulness to teachers who desire to improve. The second lowest rating is on item eight which is concerned with the personal peculiarities of the teachers. None of the differences here indicated is great and the range from the highest mean rating to the lowest is not comparatively large.

SUMMARY

We may briefly summarize the results tentatively suggested by this study in the following points:

1. Teachers who have a high degree of person-person interaction with their students tend to be rated high as instructors by the same students. Coefficient of correlation is + .639.

2. Individual students who have a high degree of person-person interaction with their teachers tend to rate them high as instructors. The 37 coefficients of correlation are all positive and range from insignificant to very high.

3. Mean of student ratings of a teacher as instructor are not correlated with single administrator ratings of the same teacher. Coefficient of correlation is — .078.

4. Ratings by two administrators of a given teacher on a common scale show a very low correlation + .245.

5. Mean ratings by students show a much closer agreement with means of two administrators' ratings. Correlation is + .631 for a limited number of cases.

6. Differences in age, sex, or classification of students made no significant differences either in regard to ratings of person-person interaction or ratings of the teachers as instructors.

7. The age or sex of teachers has no significant effect on either person-person interaction or the rating of teachers as instructors. However women under 30 have a slightly higher degree of person-person interaction with their students than women over 30.

8. In this study teachers in smaller rural schools have a higher degree of person-person interaction with their students than do teachers in larger urban schools but the differences are not great.

9. In the schools studied the students of the larger urban schools rated their teachers slightly higher as instructors than did the students in smaller rural schools.

If we accept the theory that personality develops through interaction with other personalities, then it seems to the writer that the quality of person-person interaction is significant in determining the degree of influence or the effect which one personality has on another. Thus, aside from the data on teacher-pupil relations, this study suggests a method for developing a "measurement" of the effect of one personality in the development of another personality. Furthermore, for teachers already in service, this study would indicate that if they care to improve their ability to teach, they would do no harm, at least, by improving their person-person relations with their students.

A SURVEY OF STUDENTS' CONCEPTS CONCERNING LOST AND FOUND PROPERTY

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Editor's note: To live together well involves a knowledge and skillful use of many social principles and practices. The author presents in the paper here reported interesting data relative to one problem of human relationship, namely the students' concepts of lost and found property.

TO LIVE together well is a social problem. It involves ethical principles, law procedures, citizenship training, religious doctrines, and educational guidance. Most persons accept the assumption that certain rights of others must be respected. Paying debts, keeping one's word, adopting safety regulations, avoiding trespassing, refraining from slander, doing no bodily injury, and respecting property rights are among those social acts which individuals expect others to respect. These acts involve certain fundamental legal knowledges, socially accepted right attitudes, and approved overt behavior.

Besides the governmental sanction of the individual right to hold property, present moral sanction is given to the principle that it is dishonorable either to take or to fail to return property. Our society holds that the act of stealing and the failure to aid owners to obtain lost property marks the individual as a type of unsocial being who has not learned to live together well with his fellow men.

Problems concerned with property rights are serious enough that persons who interfere with these rights are punished. The problem of lost and found articles is one phase of property rights. The failure to attempt to find the owner of a lost article is frequently considered, in law courts, as larceny. Ethical principles may conflict with legal standards, but the fact is that the statutes exist, subject to the interpretation of the courts. These statutes will continue to exist until the conflicting ethical principles are enacted into laws. But while this change is evolving, the difficulty of thinking and acting in moral and legal judgments is intensified.

A survey of the court situations studied relative to this problem shows cases dating from 1844 to 1922, a period of 78 years. The survey of court situations also shows that typical cases appeared in nine different states. Both white and colored men and women were involved in these court cases. That the problem arises frequently is also shown by the study of

newspaper lost and found columns. A sampling from nineteen different newspapers taken at random dates, as well as a record kept for consecutive dates, show a report of 1016 articles lost with only 41 articles reported found. Some states have considered it of enough importance to make provision for it in their statutes.

Three aspects of the problem of lost and found property are the concern of this study: (1) students' concepts regarding court cases of lost and found property; (2) students' concepts regarding the right action to take in relation to lost and found property; and (3) students' concepts regarding the law in the state relating to lost and found property.

To get data students were asked to check a questionnaire, based on actual court situations, existing laws, and practiced procedures. An opportunity was given for free expression on questions raised relating to the best action in stated court situations, and knowledge of the law existing in the state regarding lost and found property. In Part I of the test, "Opinions Regarding Problems Brought into the Courts," ten actual court case situations were used for testing purposes. They dealt with articles found with an ownership clue, articles found on one's own property, articles found on public property, and articles found on the property of other individuals.

An example of a court situation used in one form of the test is the following:[1]

Mrs. Riley while walking along the road with her twelve year old daughter, saw a leather satchel lying on the ground. She told her daughter to put the satchel in a sack which the girl was carrying. After arriving home it was found that the satchel contained $444.00 in money. In the satchel was a piece of cardboard with the owner's name written on it. Mrs. Riley could not read, and neither could her daughter. Mrs. Riley destroyed the cardboard and used the money.

1. Should Mrs. Riley have taken the money for her own use?	Yes Don't Know No
2. Should Mrs. Riley have left the satchel and money in the road?	Yes Don't Know No

[1] Complete tests and the complete report of this study are on file in the State University of Iowa Library; Donner, Arvin N., *A Survey of Students' Concepts Concerning Lost and Found Property.*

3. As long as Mrs. Riley could not read the owner's name did she have the right to the money?	Yes Don't Know No
4. Should Mrs. Riley have taken her time to find the owner?	Yes Don't Know No
5. Should Mrs. Riley have kept quiet, and let the owner look her up?	Yes Don't Know No
6. Would it have been all right for Mrs. Riley to have given the money to a children's hospital?	Yes Don't Know No
7. Could Mrs. Riley be punished for keeping $444.00?	Yes Don't Know No
8. Should Mrs. Riley be sent to the penitentiary for this?	Yes Don't Know No

In Part II of the test, "Opinions Regarding Right Actions," an attempt was made to set up issues relating to judgments, beliefs, attitudes, and actions which involved decisions of the best thing to do in cases of lost and found property. Such issues as the following are involved in every problem of lost and found property: When is an article lost? When is an article mislaid? When is an article discarded? When an article is lost who is responsible for its return?

Does the type of owner, private or corporate, relative or stranger, rich or poor, make a difference in the action of the finder? Does the kind of article, its value, or its newness have anything to do with its return? Is there a difference if the article is of value to both the finder and the loser, or is of value only to the loser? Is the carelessness of the loser to be considered? Should the finder be legally responsible for aiding the loser when the careless individual is at fault? Would it be better not to pick up a lost article and thus avoid any possible difficulty later?

Other questions which make the problem complicated for the finder are the following: How long should the finder wait before taking some action to find the owner? How valuable should an article be before the

finder should advertise? What should be done with articles of different values? When is an article properly described? Under what circumstances should a reward be given? Should there be a penalty for failure to return a lost article? Should failure to return a lost article to a known owner be considered larceny? Can lost and found property offenses be taken to court? Is the existing statute penalty dealing with property theft just, is it too severe, or is it too lenient?

In the test the above issues are stated, in so far as possible, in concrete problems, and ask for a reaction as to what the individual considers the best of the multiple actions listed. Examples of these issues appearing in the test forms are the following:

A fountain pen found on a desk in a bank has probably been—

lost and the owner should be looked for	( )
mislaid and the owner will return for it	( )
discarded and the owner no longer wishes it	( )

If two articles were found, one belonging to a friend, and one to a stranger, the average finder would be most likely to—

return both articles	( )
return the article belonging to the friend	( )
return the article belonging to the stranger	( )

A finder would be most likely to return a—

pair of glasses worth $15.00	( )
dog valued at $15.00	( )
pocketbook containing $15.00	( )

If an article is valued at $100.00 a fair reward to offer would be—

$ 1.00	( )
$ 5.00	( )
$10.00	( )
$25.00	( )
$50.00	( )

If an article valued at $100.00 were found and not returned to the known owner, should the finder be—

reprimanded	( )
imprisoned 30 days	( )
imprisoned 1 year	( )

imprisoned 5 years ( )
imprisoned 10 years ( )
imprisoned for life ( )
fined $ 20.00 ( )
fined $ 100.00 ( )
fined $ 250.00 ( )
fined $ 500.00 ( )
fined $1,000.00 ( )

Would this be a better world to live in if—

"finders were keepers"? Yes / No

there were no laws regarding lost and found property? Yes / No

careless persons should not expect to get back lost property? Yes / No

finders tried to locate owners? Yes / No

Part III of the test, "Opinions Regarding the Law," asked for the student's knowledge of the existing law in his particular state, as well as the individual's opinions as to what he believes should be the existing law in his state. To obtain information as to whether or not a student knew the existing law in his state, he was asked to write out in detail what the law is regarding lost and found articles. Examples of test material used to measure opinions regarding the law are the following:

According to your belief should the finder of a pen valued at $8.00—

look for the owner? Yes / Don't Know / No

report to the county auditor within 5 days describing the property in detail? Yes / Don't Know / No

post a notice in the court house? Yes / Don't Know / No

post a notice in 3 public places in the county? Yes / Don't Know / No

publish a notice weekly for 3 weeks in a county newspaper?	Yes Don't Know No
make affidavits stating he has notified the county auditor and posted notices?	Yes Don't Know No

According to the law in your state what should the finder do?

If the property becomes unavoidably destroyed should the finder be held responsible?	Yes Don't Know No
Should the finder be entitled to 10% reward of the value of the property found?	Yes Don't Know No
Should the finder be paid by the owner for expenses which might arise in taking care of property found?	Yes Don't Know No
If the finder hides articles found until a reward is offered should he be guilty of theft?	Yes Don't Know No
If the property found contains no means of identification should the finder be responsible?	Yes Don't Know No
Should the finder be guilty of larceny if he knew the owner of the property and did not return it?	Yes Don't Know No

A total of 2188 students participated in the study. These students, 1032 boys and 1156 girls; 1462 from Iowa, 724 from Texas; ranged in ages from ten to twenty years. The students selected were from the fifth through the twelfth grades, 772 from the elementary grades, 666 from the junior high school grades, and 750 from the high school grades. The white students numbered 2031, and 157 were colored students.

Ten Iowa school systems, and four Texas school systems cooperated in the study. The cities where these school systems were located, ranged in size from less than 1,000 population to 150,000 population, and represented farming, railroading, meat packing, manufacturing, and oil refining communities.

The findings of this study show

(1) that students do not possess the statute information regarding what to do in cases of lost and found property. None of the 2188 students tested could give the state statute regarding lost and found property, and seventy-eight percent of their responses to questions dealing with the state statute concerning lost and found property were answered, "Don't Know," or their responses were gross inaccuracies.

(2) that although eighty-six percent of the students' judgments correspond with court decisions regarding lost and found property, yet fourteen percent, or one student out of every seven, report judgments, which if carried out in action, would mean punishment by law.

(3) that students accept certain behavior actions which are not socially accepted or legally approved.

An analysis of test results relating to lost and found property also shows location and race differences which were statistically significant. The average item difference of the Iowa white students' judgments shows a closer correspondence (4.9 times its standard error) with court decisions than do the judgments of the Texas students. The average item difference of judgments of white students shows a closer correspondence (4.2 times its standard error) with court decisions than are the judgments of colored students.

Although not statistically significant, average percent differences seem to indicate that girls' judgments correspond more closely to court decisions than do boys' judgments, that eleven year old students' judgments correspond more closely to court decisions than do the judgments of fifteen or eighteen year old students, but that twelfth grade students' judgments correspond more closely to court decisions than do the judgments of sixth or ninth grade students.

An analysis of students' reported beliefs regarding issues involved in lost and found property show that white students more than colored students, Iowa students more than Texas students, twelfth grade students more than sixth or ninth grade students, and eighteen year old students more than eleven or fifteen year old students know the legal meaning of the terms "mislaid property," "lost property," and "discarded property."

The sixth grade students more than the ninth grade or twelfth grade students, the eleven year old students more than the fifteen year old or

eighteen year old students, and the colored students more than the white students believe that the average finder would return all lost articles he found.

Eleven year old students more than fifteen year old or eighteen year old students, sixth grade students more than ninth grade or twelfth grade students, and girls more than boys favor the giving of a large reward to the finder of lost property.

The colored students more than the white students believe in a severe punishment for failure to return found property, and advocate imprisonment instead of fines as a means of punishment.

A composite picture based on students' beliefs regarding general behavior in relation to found property shows the following: Fifty percent of the students believe that responsibility for the return of a lost article should be placed jointly on the loser and finder; sixty-four percent of the students believe that the average finder would more likely return an article belonging to a friend than one belonging to a stranger; sixty-one percent of the students believe the finder would be more likely to return found property to a poor woman than to a rich man; sixty-one percent of the students believe the finder would be more likely to return an article that only the owner could use than an article that anyone could use.

That the amount of effort required to locate the owner should be the basis for reward and not the value of the article is the belief of sixty-three percent of the students. Sixty-one percent of the students believe that the penalty now existing for failure to return lost articles is too severe. Eighty percent of the students believe that definite laws stating what the finder and loser should do would be helpful.

Ninety-nine percent of the students state that if they found an article they would not use it or give it away; and sixty-two percent state that they would pick up found articles; seventy-nine percent state that they would advertise; and seventy-three percent claim that they would look for the owner. The belief that "finders are keepers" is held by as many as seven percent of the students.

It should not be too much to expect that students' knowledge and judgments regarding social problems should improve as the students mature in years. This study, however, shows that although knowledges regarding lost

and found property increase somewhat with age and grade training; yet judgments corresponding with court decisions, and attitudes toward socially accepted behavior are equally as high with younger students as with older students.

If the statute is good, then some method should be adopted to make the contents of the law common knowledge to adults and young people. If the citizenry follows a better procedure regarding this problem than that provided by the statutes, then the existing law should be revised and the public informed.

If students possess the correct information as to what should be done in cases of lost and found property, and if their attitudes are those commonly accepted by the best society, then the teaching problem is limited to maintaining a behavior reaction commensurate with the knowledge and attitudes already acquired. If, however, students do not know what should be done regarding lost and found property, or if their attitudes toward such are contrary to those commonly accepted by society, the teaching problem is increased, for then knowledge must be given, and attitudes reconditioned, as well as overt behavior directed.

Because the problem of property rights is one which is universal, and one which is crucial and difficult to solve; because lack of knowledge limits ability to act in accordance with the law; and because incidental teaching which has been the procedure in matters of this nature in the past has been ineffective, it seems evident that there is need for teaching students about these legal problems.

TABLE I

STUDENTS' RESPONSES CORRESPONDING WITH STATUTES CONCERNED WITH LOST AND FOUND PROPERTY

Group Response	No. Students	% Students
Iowa—Correct Statutory Knowledge	0	0
Texas—Correct Statutory Knowledge	0	0
Total—Correct Statutory Knowledge	0	0
Iowa—Partially Correct Statutory Knowledge	298	20
Texas—Partially Correct Statutory Knowledge	189	26
Total—Partially Correct Statutory Knowledge	487	22
Iowa—Inaccuracies, Vague, no Knowledge	1489	80
Texas—Inaccuracies, Vague, no knowledge	725	74
Total—Inaccuracies, Vague, no Knowledge	2194*	78

* Total responses exceed total individuals (2188) as more than one response per person was sometimes reported.

TABLE IIa

STUDENTS' RESPONSES CORRESPONDING WITH COURT DECISIONS IN LOST AND FOUND CASES

Situation 1: Articles Found With Property Clue, (Defendant finds money with name of owner in purse)

Decision of Court:	% Student Responses Agreement with Court
Finder should not take found money for his own use	98
Finder should not leave money lying in the street	96
Finder has no right to money even though he did not see loser lose it	89
Finder should inconvenience himself if necessary to find owner	85
Finder is responsible for locating owner	93
Finder giving found property to an innocent party does not clear him	70
Finder could be punished according to law	42
Finder should be punished for failure to return property	55

Note—This table reads: 98% of the students' responses agree with the decision of the court that the finder, in this court situation, should not take found money for his own use.

TABLE IIb

STUDENTS' RESPONSES CORRESPONDING WITH COURT DECISIONS IN LOST AND FOUND CASES

Situation 2: Articles Found With No Property Clue, (Defendant finds article with no means of identification attached. The finder gives the article to another member of the family.)

Decision of Court:	% Student Responses Agreement with Court
Finder turning over found articles to other members of the family does not clear him	91
Finder leaving found article untouched is not the best procedure	86
Finder should inconvenience himself if necessary to find owner	89
Finder is responsible for locating owner	69
Finder giving found property to an innocent party does not clear him	85
Finder turning over found property for civic purposes does not free him	26
Finder could be punished according to law	67
Finder should be punished for failure to return property	59

Note—This table reads: 91% of the students' responses agree with the decision of the court that the finder, in this court situation, does not clear himself by turning over found articles to other members of his family.

TABLE IIc

STUDENTS' RESPONSES CORRESPONDING WITH COURT DECISIONS IN LOST AND FOUND CASES

Situation 3: Articles Found on One's Own Property, (In one situation, estray property is found on the defendent's premises, in the other situation, misplaced property is found concealed within property honestly purchased.)

Decision of Court:	% Student Responses Agreement with Court
Finder is not entitled to estray property or misplaced property concealed within property honestly purchased	97
Finder doing nothing about found property is not the best procedure	93
Finder should return property even though owner might not know of his loss	67
Finder should inconvenience himself if necessary to find owner	95
Finder of estray animals should assume responsibility of locating owner	72
Finder of misplaced property concealed within property honestly purchased should assume responsibility of locating owner	47
Finder giving found property to an innocent party does not clear him	85
Finder could be punished according to law for failure to return an estray animal	56
Finder should be punished for failure to return an estray animal	77
Finder could be punished according to law for failure to return misplaced property concealed within property honestly purchased	33
Finder should be punished for failure to return misplaced property concealed within property honestly purchased	52

Note—This table reads: 97% of the students' responses agree with the decision of the court that the finder, in this court situation, is not entitled to estray property or to misplaced property concealed within property honestly purchased.

TABLE IId

STUDENTS' RESPONSES CORRESPONDING WITH COURT DECISIONS IN LOST AND FOUND CASES

Situation 4: Articles Found on Property Frequented by the Public, (In one situation, money is found in a public shop, in the other situation, a valuable package is found on a train.)

Decision of Court:	% Student Responses Agreement with Court
Finder is not entitled to property found in public places	91
Finder should notify official of found article but not assume charge of property	22
Finder has responsibility even though he did not see loser lose article	86
Finder does not need to assume further responsibility after found property has been turned over to an official	35
Finder should allow manager of public property to assume responsibility for locating loser	51
Finder has no right to divide property found among innocent persons	98
Finder should be punished according to law	45
Finder should be punished for not turning over property to public official	43

Note—This table reads: 91% of the students' responses agree with the decision of the court that the finder, in this court situation, is not entitled to property found in public places.

TABLE IIe

STUDENTS' RESPONSES CORRESPONDING WITH COURT DECISIONS IN LOST AND FOUND CASES

Situation 5: Articles Found on Property of Other Individuals, (Money is found buried in land which a former owner of the land claims is his money.)

Decision of Court:	% Student Responses Agreement with Court
Present owner of land is not entitled to money found	62
Land owner should take some action to locate owner of money	92
Not knowing owner does not lessen responsibility of finder	71
Action of land owner to notify officials and follow law of this state was right	90
It is not necessary for owner of land to do more than law required to locate loser of property	37
Present owner of land acted in good faith and followed statutes of his state	69
Defendant could not be punished according to law	70
Plaintiff should not be entitled to the found money according to law	55

Note—This table reads: 62% of the students' responses agree with the decision of the court that the present owner of the land, in this court situation, is not entitled to the money found.

TABLE III

STUDENTS' RESPONSES TO ISSUES INVOLVED IN LOST AND FOUND PROPERTY

Item Response:	% of Responses
Knowledge:	
Knowledge of legal term "mislaid property"	74
Knowledge of legal term "lost property"	86
Knowledge of legal term "discarded property"	88
Beliefs:	
Responsibility placed on loser and finder	50
Return article to friend rather than stranger	64
Return article to individual and a company	43
Return article to poor woman rather than a rich man	36
Return old used article rather than new unused article	50
Return article only owner could use rather than article anyone could use	61
Return $15.00 glasses rather than $15.00 dog or $15.00 in money	55
Careless persons made to pay for returned article	45
Article of little value, little effort to find owner, no reward	52
Article of little value, great effort to find owner, demand reward	46
Article of great value, little effort to find owner, no reward	50
Article of great value, great effort to find owner, demand reward	63
Accept reward only if it costs to locate owner	63

TABLE III (Continued)

Item Response:	% of Responses
Beliefs:	
Fair reward for $100.00 value, is $5.00	34
Value $15.00, punishment 30 days to 5 years, fine $100.00 to $500.00 too severe	64
Value $50.00, punishment 1 year to 10 years, fine $100.00 to $1,000.00 too severe	57
Value $20.00, a just punishment, a reprimand	31
Value $100.00, a just punishment, 30 days or $100.00 fine	37
A better world if finders were not keepers	93
A better world if there were lost and found laws	87
A better world if there were specific lost and found laws	80
A better world if careless persons might expect to get back lost property	59
A better world if finders tried to locate owners	94
Best Actions:	
Finder pick up article, look for owner	89
Finder immediately advertise	92
Finder wait a day to see if advertisement is run	84
Finder spend time and money to locate owner if value is $100.00	65
Finder give detailed description of article	44
Not pass up a lost article	99
Pick up lost article	62
Look for owner	73
Not wait to see if anyone inquires	72
Advertise	72
Not to notify a city or county official	53
Not to use the article	99
Not to give the article away	99
Watch for advertisement in the paper	79
Tell that the article has been found	96

Note—This table reads: 74% of the students knew the legal meaning of the term "mislaid property;" 50% of the students believed the responsibility should be placed on both the loser and the finder; 89% of the students believed the finder would pick up lost articles.

EDITORIAL

TRENDS IN EDUCATIONAL RESEARCH

EDUCATIONAL research shows the same characteristics of growth and change that characterize other institutions in modern life. One does not know what is the fundamental cause, whether it is the changes in population, in economic status of peoples, in the fluctuation of social forms, in the influence of great men or even in changes in climate, but at any rate each decade shows such entirely new characteristics that they may be designated by such adjectives as gay (90's), roaring (20's), or gloomy (30's). A history of educational research when it is written will show a corresponding flow and shift in educational research.

The origins of educational research are well known and have been described from time to time. How many times has it been recounted that the modern movement in research in education had its start in the spelling tests constructed by J. M. Rice in 1874–1895! How many times has the story been told of Binet's contributions, together with Simon's, in trying out tasks to serve as tests for intelligence which were finally assembled into the well-known Binet–Simon Scale!

In the second decade of the present century, the intelligence testing movement got under way, culminating in the work of Otis just before the World War and the Army Alpha Intelligence Examination during the War. This work started the avalanche. It is hard to put oneself in the frame of mind of the workers at that period and to catch the enthusiasm with which Terman, Otis, Trabue, Thorndike, Miller, and a host of others set to work to make intelligence tests available for schools; and the heat with which the critics—Bagley and others—challenged the implicational of determinism in these tests. This latter controversy, by the way, still continues!

The work on intelligence tests as well as previous work by Courtis, Woody, Thorndike, and McCall, Hotz and others, also started the mass production of tests of achievement in school subjects and inaugurated the rosy era of making education "scientific" when "Whatever exists exists in some amount—and hence can be measured" was the slogan.

Adventurous souls also began experimenting with the measurement of the non-intellectual and emotional phases of mind. Woodworth led the way with his "Personal Data Sheet" during the War. By the end of the third decade of the century a considerable accumulation of research was at hand to indicate the values in observation, ratings, questionnaires, interviews, character tests, and other less rigorous devices for studying personality.

The 1930's might be characterized as the time when questionnaires for measuring interest, attitude, and adjustment were tried out, at first enthusiastically as though the last stone to the edifice of the scientific method in education had been raised into place, later with some misgivings. More recently the misgivings have grown. Whereas tests to measure intelligence and achievement have proved their worth and notwithstanding persistent criticism are recognized today as having a permanent contribution to make in the work of guidance and evaluation in schools, the same cannot be said of tests of personality. The results are generally disappointing. Questionnaires are decidedly untrustworthy as indices of aspects of personality.

The trouble seems to have been that the psychology on which this work was done was faulty. America has held to its behavioristic, connectionistic psychology too long. It has made us realists in one sense, but at the same time has made us surface realists only. We have been like prospectors who wanted to find gold on the surface but were not willing to mine below. Depth psychology has been in America ever since Brill translated Freud's works and Freud himself lectured in Clark University in 1909. But education closed its eyes to depth psychology and the psychology of motivation, and instead concentrated on what it could see. Today America is the gainer at Europe's expense with the influx of large numbers of trained psychoanalysts, particularly from Vienna, who will help us to become better informed and more sympathetic toward depth psychologies.

Recently considerable experimentation has been undertaken with so-called "projective techniques"[1] (a term apparently coined by Lawrence K.

[1] Horowitz, R., and Murphy, L. B. "Projective Methods in the Psychological Study of Children," *Journal of Experimental Education* (December, 1938).

Frank, L. K. "Projective Methods for the Study of Personality," *Journal of Psychology*, VIII (October, 1939), pp. 389–413.

Murray, H. A., and Others. *Explorations in Personality* (Oxford University Press, 1938).

Frank). The Rorschach method is perhaps the best known of these projective techniques but a large number of others have been described and experimented with using such stimuli as ink blots, cloud pictures, pictures of dramatic situations, musical compositions, odors, and such constructive and play materials as painting, finger painting, drawing, dolls, and other toy materials. With any of these media the child (or older person) is asked to express himself freely and in any way that seems interesting and important to him. From pictures, for instances, he is asked to tell a story. It has been found that in any of these methods the child "projects" his own hopes and fears, his wishes, desires, likes and dislikes, preferences and aversions, his basic complexes and life theories. Typically he will identify himself with a character in the picture about which he is telling a story or with the doll or puppet with which he is playing. These devices reveal, therefore, some of the inner springs of thought and action and touch a child's basic problems. Questionnaires failed to take account of motivation and a person would, according to his needs, represent himself fairly in his answers or distort himself in his own thoughts about himself, as he would be seen by another person. Projective techniques, however, directing attention away from the person to the ink blot or picture enables the person to express his own inner phantasies and attitudes without having to distort them at the same time because of a possible self-reference.

The work on projective techniques has barely started. Methods of interpreting the results have yet to be worked out and an immense amount of experimentation with them needs to be done. They will not result in a simple numerical score and cannot be used by the application of arbitrary rules and directions. For some time, therefore, their administration belongs to the trained specialist. Indeed, one wonders whether teachers will ever want to use them in direct application to the teaching process because, including as they do so much unconscious material, they are heavily charged emotionally. But projective techniques represent the path of progress in educational-psychological research and they may become the furor of the 1940's.

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REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

BERNAL, J. D. *Social Function of Science* (New York: The Macmillan Co., 1939), pp. xvi + 482. $3.50.

BARTLETT, FREDERICK CHARLES, and Others. *The Study of Society: Methods and Problems* (New York: The Macmillan Co., 1939), pp. xii + 498. $3.50.

HAMILTON, GORDON. *Theory and Practice of Social Case Work* (New York: New York School of Social Work Publications, Columbia University Press, 1940), pp. viii + 388. $3.00.

HOLLIS, FLORENCE. *Social Case Work in Practice: Six Case Studies* (New York: Family Welfare Association of America, 1939), pp. x + 313. $2.50.

LINDENBERG, SIDNEY J. *Supervision in Social Group Work* (New York: Association Press, 1939), pp. xiv + 141. $1.50.

OMAN, SIR CHARLES WILLIAM CHADWICK. *On the Writing of History* (New York: E. P. Dutton and Co., Inc., 1939), pp. xi + 307. $2.50.

MILLER, HUGH. *History and Science: A Study of the Relation of Historical and Theoretical Knowledge* (Berkeley, California: University of California Press, 1939), pp. x + 201. $2.00.

WILLIAMS, CECIL B., and STEVENSON, ALLEN H. *Research Manual: With a Bibliographical Guide to College Studies and Interests* (New York: Harper and Brothers, 1940), pp. xiv + 264. $1.25.

On numerous occasions the present reviewer has emphasized the importance for educational investigators of treatises on research or problem-solving procedures in other fields, especially science in general, sociology, social work, history, philosophy, and psychology. The books listed above are illustrative of the numerous publications on the methodology of research in the social sciences. Such methods and materials may well become better known among educational workers. The unifying theme in this group of volumes is the emphasis on social problems, methods, and applications.

The Social Function of Science was written by a young English physicist before England's entry into the European war. The thesis of the book is that on the proper relation of science and society depend the welfare and even the very existence of both. Wars and economic crises have shown that science can be used for destructive and wasteful purposes rather than for progressive improvement of the conditions of life. Science has moved from an individual to a collective basis, now dependent on industrial, state, institutional, and philanthropic subsidies, with a resulting inefficiency of internal organization and in application to prob-

lems of production and of welfare. Emphasis on material production and on the instruments of war has led to technological unemployment and to the neglect of problems of human welfare, health, and domestic life, with the biological and sociological sciences starved in deference to the more immediately profitable physical and chemical sciences. A series of chapters describes what science has done in relation to the following topics: historical background, organization for research in Britain, efficiency, instruction in science, application, war, and international research. Another series of chapters outlines what science could do in relation to the following problems: training of the scientist, reorganization of research, scientific communication and publication, financing of research, planning the problems to be attacked, and use of science in the service of man and in social transformation. It is only natural that most of the illustrations and references are of English origin, although occasional citations of American publications turn up in unexpected places.

The Study of Society was written by a group of English authors who met at intervals for discussion of the manuscripts which had been circulated for criticism among members of the group. The book is an attempt to apply the methods of psychology, anthropology, and sociology to the problems of complex societies. These social science fields determined the grouping of the chapters. A more logical, and at the same time a more functional organization of the content, would have been to take up in turn each of the major methods of research, citing under each investigational procedure appropriate applications to psychology, anthropology, and sociology. While the book gives reasonable consideration to, and many examples of, the several methods and techniques—historical and biographical, normative-survey (observation, interview, questionnaire, test, and rating scale), experimental, case, genetic, and statistical—there is considerable repetition when such a technique as the interview is discussed in at least four widely separated chapters. Also, the organization of the book leaves the pattern of research methodology indistinct, and for this reason does not completely identify *scientific method* as a major unifying factor in the fields treated, as well as in all other areas open to the research approach. Many of the numerous references cited are drawn from the literature of the United States, whose workers will be interested to note the American studies which have attracted the attention of investigators elsewhere. As an outline of problems, methods, and studies in psychology, anthropology, and sociology the volume also is a useful overview of the British literature.

Theory and Practice of Social Case Work draws case material from clinic, court, hospital, and social agency, especially the latter, to document the theories advanced. The author prefers this method to the other plan of using case material, that of describing the case and eliciting its theoretical conclusions. The problems of social work include: poverty, unemployment, transiency and foreignness, illness, broken homes, physical and mental handicaps and old age, industrial injuries and inadequate wages, limited recreation, poor housing, and problems of behavior. The services which meet these needs are: family and child welfare, public assistance, social insur-

ance, health and legal services, vocational rehabilitation, aid to travelers, resettlement, services for the crippled and disabled, programs for the prevention and treatment of delinquency, child guidance, mental hygiene and social education, labor legislation, and housing. Comment is hardly necessary to indicate the relationship of such problems and services to educational problems, although the case studies summarized in the present book refer only incidentally to school adjustments. As is to be expected, most of the chapters are concerned with the sequence of major steps in case study: gathering the necessary information, diagnosis, and treatment. The liberal use of case materials lends added interest and concrete detail.

Social Case Work in Practice differs in organization from the preceding book in that it consists of six detailed case studies, followed by a concluding chapter of generalizations concerning the principles underlying treatment. These generalizations are supported by frequent cross references to the case studies and to a bibliography of 86 references. Helpful interpretation also accompanies the detailed case materials, which constitute the bulk of the volume. School workers probably will be most interested in the case of Michael Fagan, a lonely too submissive adolescent with too high vocational ambitions who asked financial aid to further his education. He was assisted financially, in vocational redirection, in making living arrangements, and in emotional adjustment.

Supervision in Social Group Work recommends the application of the democratic, cooperative theory of supervision to such leisure-time programs and activities as settlements, community centers, park reserves, boys' clubs, boy scouts, girl scouts, Y. M. C. A., Y. W. C. A., churches, etc., with emphasis on the improvement of the recreational activity or institutional program and on the growth of the leader. Most of the space is given to procedures for observation of group activity and to the techniques of individual and group conferences between group leaders and supervisor. Numerous records of such observations and conferences are reproduced. Sub-headings within the chapters and an index would have done much to render the book more usable. The newness of the democratic plan of supervision in group work is reflected in the small size of the book and in the absence of supporting research or references. This statement suggests that group leaders and supervisors may read with profit the recent books in the area of educational supervision, since many of the techniques are applicable to both fields.

On the Writing of History is by an English author with 53 years of experience in the writing and teaching of history. He defines history as "man's effort to record the doings of man" (p. v), in which there is no evidence of regular cycles of progress or of orderly evolution from causes to inevitable results. He believes that complete impartiality in the writing of history is hardly possible, since the views of the historian are colored by the political and moral atmosphere of his day. To push self-restraint so far as to record events without commenting on them produces an unreadable middle ground between such dry records and the rhetorical flourishes or literary embellishments of some historical writers. The fourteen chapters are

concerned in the main with sources, criticism, perspective, and interpretation. Many reminiscences concerning historians and hundreds of illustrations from centuries of historical works stud the pages of the book. Topical subheadings and more complete bibliographical references would have rendered the volume more useful as a reference work.

History and Science, written by a philosopher, seeks to show the relation of historical form to structure in nature and of historical knowledge to theoretical natural knowledge. "Theoretical analysis moves from observed particular occurrences to a recognition of types, defined by generalizations" (p. 5), while history does not aim at generalizations, although it is more than a haphazard collection of particular parts. The second chapter discusses Darwin's epochal demonstration of the relation between historical and theoretical science, especially in the field of biology. Among the other chapters are analyses of the relation of history to social science, physical science, philosophy, and religion. Kant's doctrine is paraphrased and extended as follows, to describe such relationships: "Theory without history is empty, history without theory is blind" (p. 36). The author's evolutionary conception views history as the description of human progress, which is a philosophy materially different from that expressed by Oman, as summarized in the preceding paragraph. The volume lacks an index and has almost no documentation.

A Research Manual, while written for the instruction of under-graduates in the preparation of reports, should prove useful to graduate students in dealing with the mechanics of writing. The manual makes no attempt to deal with the methodology of research, limiting its discussion to such topics as library usage, preparation of the bibliography, note-taking, documentation, graphic representation, and other problems in the preparation of papers. The appendices include a bibliographical guide at the undergraduate level, footnote and bibliographical forms, and illustrative articles written by undergraduates (accompanied by the comments of the professor).

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Research Abstracts and Bibliographies

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

ADAMS, HENRY ALBERT. *Criteria for the Establishment of Public Junior Colleges in Kentucky*, Bulletin of the Bureau of School Service, XII, No. 4 (Lexington, Kentucky: University of Kentucky, June, 1940), 156 pp.

The author presents criteria for determining community need for a junior college and proposes a policy for Kentucky.

BETTS, EMMETT ALBERT, and AYERS, ARTHUR W. *Stereopis: Data on Visual Sensation and Perception Tests, Part III* (Meadville, Pennsylvania: Keystone View Company, 1940), 37 pp.

This is the third of a series of research reports relative to various aspects of reading. This report deals with stereopsis.

DRAZIN, NATHAN. *History of Jewish Education from 515 B. C. E. to 220 C. E.*, Johns Hopkins University Studies in Education, No. 29 (Baltimore: Johns Hopkins Press, 1940), 161 pp.

The author presents a historical survey of the philosophy, evolution, content, and administration of Jewish Education.

HOLY, T. C. and WENGER, ROY. *The Extent of Financial Proposals to be Submitted by Ohio County School Districts on November 5, 1940* (Columbus, Ohio: Bureau of Educational Research, Ohio State University, October, 1940), 14 pp. Mimeographed.

This report contains a list of the special levies and school bond issues submitted in Ohio county school districts on November 5, 1940, together with those submitted at the May primary, or at a special election.

HOLY, T. C., and WENGER, ROY. *Financial Data for Ohio Cities and Exempted Villages as of September 1940* (Columbus, Ohio: Bureau of Educational Research, Ohio State University, October, 1940), 19 pp. Mimeographed.

The authors present enrollment and financial information for city and exempted village school districts of Ohio.

KELLEY, TRUMAN L. *Talents and Tasks*, Harvard Education Papers, No. 1 (Cambridge, Mass.: Graduate School of Education, Harvard University, 1940), 48 pp.

The author provides an ingenious technical discussion of individual abilities and occupational needs with appropriate statistical methods.

LAFFERTY, H. M. *Graduate Studies 1940*, Bulletin of The East Texas State Teachers College, XXIII, No. 7 (Commerce, Texas: East Texas State Teachers College, September, 1940), 106 pp.

The bulletin presents abstracts of theses for the Master's degree at the East Texas State Teachers College.

LITTLE, WILLIAM J. S., et al. *The Assessment of Educational Films,* Publications of the Scottish Council for Research in Education, XVII (London: University of London Press, Ltd., 1940), 38 pp.

The Committee on Visual Aids in Education discusses motion pictures as teaching aids.

NETERER, ELIZABETH, and WAGONER, LOVISA C. *What is a Nursery School?* Bulletin of the Association for Childhood Education (Washington, D. C.: Association for Childhood Education, 1940), 24 pp.

For lay readers, the authors present information relative to a number of items pertaining to nursery schools.

PHIPPS, WILLIAM RODGERS. *An Experimental Study in Developing History Reading Ability with Sixth Grade Children Through Development of History Vocabulary,* Johns Hopkins University Studies in Education, No. 28 (Baltimore: The Johns Hopkins Press, 1940), 73 pp.

The author concludes that growth in ability to use history vocabulary in composition was more consistent throughout the period of the experiment than was growth in ability to read history.

REEVES, FLOYD W., Director. *Finding the Facts About Youth. New Strength for America. Rallying Resources for Youth.* 3 leaflets (Washington, D. C.: American Youth Commission, 1940), 15 pp., 11 pp., and 19 pp., respectively.

Finding the Facts About Youth concerns surveys used to gather information about the youth problem in three community areas so that constructive action could be undertaken. *New Strength for America* presents the unique recreational project in Columbus, Indiana. *Rallying Resources for Youth* describes the community council development in Los Angeles County, California; Dowagiac, Michigan; and Greenville County, South Carolina.

SAETVEIT, JOSEPH G., LEWIS, DON, and SEASHORE, CARL E. *Revision of the Seashore Measures of Musical Talent.* University of Iowa Studies, No. 65 (Iowa City, Iowa: University of Iowa Press, October, 1940), 62 pp.

The authors present detailed information and statistical data relative to the revised form of the Seashore measures of musical talent.

SCHRAMMEL, H. E. *Standard Tests Number,* Bulletin of Information, XX, No. 8 (Emporia, Kansas: Kansas State Teachers College of Emporia, August, 1940), 31 pp.

This bulletin contains information concerning standardized tests that can be supplied by the Bureau of Educational Measurements of the Kansas State Teachers College of Emporia, Kansas.

SEEGER, RUTH, GOOD, CARTER V. and others. *Annual List of the Research Activities of the Members of the Association* (Columbus: Ohio Educational Research Department, Ohio Education Association, July, 1940), 46 pp. Mimeographed.

This bulletin contains: a final report of the committee engaged in compiling lists of Ohio problems and titles of theses submitted to Ohio colleges and universities; a progress report of student mortality in Antioch, Baldwin–Wallace, Oberlin, Ohio University, Ohio Weslyan, and Western College; and a list of re-

search investigations carried on by the members of the Educational Research Department of the Ohio Education Association during the year 1939–40.

SLICTER, CHARLES S. "The Side Shows of Science," reprinted from *Science in a Tavern,* Second Edition (Madison: University of Wisconsin Press, 1940), pp. 137–156.

The author discusses scientific discoveries and theories relative to the nature of matter and expresses the view that they do not explain the universe.

SNEDECOR, GEORGE W., Director. *The Statistical Laboratory,* The Iowa State College Bulletin, XXXVI, No. 50 (Ames, Iowa: Iowa State College of Agriculture and Mechanic Arts, May 15, 1940), 16 pp.

This bulletin reviews the work of the Statistical Laboratory at Iowa State College.

STEEL, JAMES H., Chairman. *Twelfth Annual Report 1939–1940,* The Scottish Council for Research in Education (Edinburgh: Scottish Council for Research in Education, 1940), 15 pp.

The Scottish Council presents its report for the year 1939–1940.

STUART, HAROLD C., HILL, PENELOPE, and SHAW, CONSTANCE. *The Growth of Bone, Muscle and Overlying Tissues as Revealed by Studies of Roentgenograms of the Leg Area,* Monographs of the Society for Research in Child Development, V, No. 3 (Washington, D. C.: Society for Research in Child Development, National Research Council, 1940), 190 pp.

The authors present data on the growth of the principal tissues of the leg as revealed by x-ray films.

SWEETMAN, EDWARD. *The Educational Activities in Victoria of the Rt. Hon. H. C. E. Childers,* Australian Council for Educational Research, Series No. 58 (Melbourne: Melbourne University Press, 1940), 140 pp.

The author tells the story of the educational work of Hugh Culling Eardley Childers in Victoria, Australia.

ULRICH, R. P. *A Study of Arithmetic in Grades One to Six* (Toledo, Ohio: University of Toledo, 1940), 42 pp. Mimeographed.

The author presents a survey of current trends in the content of arithmetic using various sources: previous investigations, texts, and tests.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

PUNKE, HAROLD H. "School Busses, Drivers, Trips, and Loads," *The School Review,* XLVIII, No. 9 (November, 1940), pp. 672–684.

The author presents data relative to school busses and pupil transportation with suggestions with reference to the qualifications of bus drivers.

RICHEY, HERMAN G. "Factors of High-School Enrollment in Illinois," *The School Review,* XLVIII, No. 9 (November, 1940), pp. 657–666.

Counties with large assessed valuations provide schools of extra holding power. The economic status of the family appears also to be a limiting factor.

CURRICULA AND OBJECTIVES

PETTIT, DONALD D. "The Content of Junior High School Science," *School Science and Mathematics*, XL, No. 8 (November, 1940), pp. 763–777.

The concluding report of a study of the content of junior high school science courses as shown by an analysis of texts.

WATSON, D. R. "Objectives of Survey Courses in Physical Science," *The School Review*, XLVIII, No. 9 (November, 1940), pp. 685–692.

The author presents a detailed analysis of the objectives of survey courses in physical science.

WIED, IDA C. "Curriculum Relations Involved in the Conservation Program of the United States Biological Survey," *Science Education*, XXIV, No. 5 (October, 1940), pp. 260–268.

The author presents an analysis of certain materials of the United States Biological Survey for suggestions as to the conservation content of biology.

STATISTICS, MEASUREMENTS AND SCIENTIFIC TECHNIQUES

HOWARD, FREDERICK T., and ROBERTSON, M. L. "Scaling the Intangibles: A Second Study," *Science Education*, XXIV, No. 5 (October, 1940), pp. 249–255.

The authors present data relative to a test of cause and effect relationships in science.

WILLIAMSON, E. G., and BORDIN, E. S. "Evaluating Counseling by Means of a Control-Group Experiment," *School and Society*, LII, No. 1349 (November 2, 1940), pp. 434–440.

The authors present the results of an experimental study of counseling from which they conclude that students who have been counseled were likely to be better adjusted than those who were left to their own resources.

NEW TESTS

ALLEN, RICHARD D., and others. *Metropolitan Achievement Tests Revised* (Chicago: World Book Company).

Batteries revised for continuous measurement of achievement in all subjects in grades 1 through 8.

BYRD, OLIVE E. *Byrd Health Attitude Scale* (New York: The Psychological Corporation, 1940).

This scale consists of 100 statements concerning hygiene and safety.

DUNLAP, JACK W. *Dunlap Academic Preference Blank* (Yonkers, N. Y.: World Book Company, 1940), each form 2 pp.

Effective guidance, whether educational or vocational, implies trustworthy prediction of success or failure in given pursuits. The Academic Preference Blank has been devised to provide an objective quantitative measure of a pupil's interest in various academic fields in terms of his expressed preferences for engaging in or occupying himself with specific factors in these fields. Norms are provided for sixth, seventh, eighth, and ninth grade students and are based on the scores of 4500 children in these grades.

GESELL, ARNOLD. *Gesell Developmental Schedules* (New York: The Psychological Corporation, 1940).

This test permits a broad evaluation of the total process of child development from four weeks to five years of age. It includes 21 performance items, 17 items

of pictorial or printed material, and 25 copies of each record form.

HANES, G. M., and BENZ, H. E. Hanes–Benz Biology Test (Cincinnati: C. A. Gregory Company, 1939), two forms, 8 pages each.

A test of achievement in high school biology.

KELLEY, T. L., RUCH, G. M. and TERMAN, L. M. *1940 Revision of the Stanford Achievement Test, Form D* (New York: World Book Company, 1940).

A new series incorporating basic features which make possible an evaluation of pupil and group achievement to an extent heretofore impossible.

POND, FREDERICK L. *Inventory of Reading Experiences* (Stanford University, California: Stanford University Press, 1940), 8 pp.

The *Inventory of Reading Experiences* is designed for high school and college students to appraise the quality and quantity of reading experiences.

POTTHOFF, EDWARD F., and COREY, STEPHEN M. *Potthoff–Corey Test in Educational Psychology* (Bloomington, Illinois: Public School Publishing Company).

This test is intended for use in elementary courses in educational psychology and is divided into three parts: general educational psychology, psychology of learning, and psychology of school subjects. Each part is available in two forms, A and B.

SEASHORE, C. E. *Seashore Measures of Musical Talents, Revised Edition* (New York: The Psychological Corporation, 1940).

This popular test of musical discrimination consists of two series of records, both measuring the same factors: Pitch, Loudness, Time, Timbre, Rhythm, and Tonal Memory.

TURSE, PAUL L. *Shorthand Aptitude Test* (New York: The Psychological Corporation, 1940).

This test is designed to predict the ability of a student to learn shorthand.

Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Learning the Ways of Democracy.—With the publication of a 486-page book, entitled *Learning the Ways of Democracy*, the Educational Policies Commission of the National Education Association and the American Association of School Administrators has brought to a conclusion a year's study of citizenship education in American secondary schools. The published report consists briefly of descriptions of effective practices in civic education which were observed last year in ninety high schools in all parts of the nation.

These practices are reported under six headings: "The Course of Study," "Classroom Teaching," "Out-of-Class School Activities," "School Activities in the Community," "Administration," and "Evaluation of Outcomes." The volume also includes chapters on "The Hallmarks of Democratic Education," "Things To Be Done," and "Where Stands Your School?" the last being a series of questions by which a school staff may appraise the effectiveness of its own work in civic education.

The field work for the study was performed by a staff of six persons, including William G. Carr, secretary of the Commission; G. L. Maxwell, assistant secretary; Harold Benjamin, University of Maryland; Oliver H. Bimson, Lincoln, Nebraska, public schools; Samuel Everett, Northwestern University; and Howard E. Wilson, Harvard University. The published report was issued by the Commission, of which Alexander J. Stoddard, superintendent of schools in Philadelphia, is chairman.

Preparation of College Teachers.—In extending the program of activities to include exploration in the field of preparing college teachers, Director Karl W. Bigelow of the Commission on Teacher Education, American Council on Education, has selected Ernest V. Hollis, of the College of the City of New York, to direct the new undertaking. Both status and implementation studies in higher education are being undertaken.

There is well underway a study of the employment status of persons who received the Ph.D. and Ed.D. degrees during the 1930's. This study involves 97 graduate schools which awarded the Ph. D. degree and 24 institutions which granted the Ed.D. degree. Many graduate schools have indicated a desire for the collective opinion of college-appointing officers on what they expect of prospective college teachers. The Commission is initiating a plan for securing the opinion of these "consumers" of the doctorate product of graduate schools. It is also acting as a clearing house for indigenous activities underway in graduate schools which are calculated to im-

prove the teaching quality of persons to whom the doctorate is awarded.

During the autumn Dr. Hollis is visiting, on invitation, in many graduate schools and is acting as a "clinical consultant" on the immediate and pressing problems in particular situations. He has thus assisted graduate schools to implement their plans for more effectively using fellowship awards, selecting graduate students, providing more systematic plans for observation and apprenticeship teaching on the college level, providing opportunities for participating in guidance and counseling, and for arranging seminars on professional problems that face beginning college teachers in subject-matter fields.

Dr. Hollis is also cooperating with several professional organizations interested in improving the preparation of college teachers. He will welcome suggestions from readers of the *Journal* on either the problems to be selected or the strategy for attacking them. The headquarters of the Commission are at 744 Jackson Place, Washington, D. C.

Measurement and Guidance.—During the past year the Committee on Measurement and Guidance of the American Council on Education has continued to sponsor the work of the Cooperative Test Service, under the directorship of Ben D. Wood, and the research in the study of primary abilities by L. L. Thurstone.

The first of these enterprises is completing its tenth year of services under a subvention from the General Education Board. During these years the original commitment to produce ten comparable forms in tests in each of the major subject-matter fields at senior high school and junior college levels has been completed. About six million tests and nearly a million answer sheets for machine scoring of the tests have been distributed. The subvention has now come to an end and the continuation of the Cooperative Test Service will depend upon the income from tests now available and from those which can be prepared on the income from sales.

The study of primary abilities carried on by Dr. and Mrs. Thurstone in the past few years has centered in the problem of describing the mental endowment of an individual by a profile of ability rather than by a single index such as an intelligence quotient. The Committee has made available a preliminary edition of tests for primary mental abilities which will be revised in the light of further experimental work.

Among the activities of the Committee more recently sponsored is the study of reading in general education under the directorship of William S. Gray. The chief findings of this research have been incorporated in two reports. The first is a printed volume, entitled *Reading in General Education,* which aims to meet the need of committees and teachers concerned with reading problems, both of a general and practical nature. The second is a mimeographed statement, entitled *Proposal for a Cooperative Study of Reading in High Schools and Colleges,* which outlines problems that merit investigation and recommends a field study of the reading situation in selected high schools and colleges.

At the request of an important group of school superintendents the Committee on Measurement and Guidance has sponsored subject-matter examinations which may be used by school authorities

in improving their procedures for selecting new teachers. The chief immediate contribution of the Teacher Examination Service for public school officers is relief from the burden of making and scoring their own examinations, thus enabling them to give more adequate attention to the rating of the important but less tangible factors that determine teaching ability, such as training, experience, records, and personality factors.

An important study was initiated in 1939 for the purpose of determining the needs felt by those engaged in guidance and remedial work in schools and colleges, and of formulating practicable suggestions for meeting these needs. The complete report of the director, P. J. Rulon, has not yet been received, but the preliminary findings indicate that for the first time there will be available a reasonably accurate blue print of the status of the guidance movement.

The chairman of the Committee is H. E. Hawkes of Columbia University, who prepared this progress report.

School Plant Studies.—The School Plant Research Committee of the American Council on Education, which was organized in 1938, has under way a study of toilet and wash bowl facilities in a large number of schools throughout the United States for the purpose of determining the ratio between the number of fixtures and the school enrollment. Most of the original data for this study —which is being carried on under the immediate direction of Ray Scherer, superintendent of school buildings, Rochester, New York, and member of the School Plant Research Committee—have been collected and are now being analyzed for presentation to the Committee at its next meeting. It seems evident from these data that the present code requirements on the number of fixtures in relationship to the enrollment are much too high.

The Committee, in cooperation with the Interstate School Building Service of George Peabody College for Teachers, also has a second study under way. The purpose of this investigation, with a grant of $12,000, is to develop specifications for school equipment based on quality. Already such a specification has been prepared for folding chairs, based on a series of performance tests which are being carried on in cooperation with the United States Bureau of Standards. In the development of such quality specifications the plan is to classify equipment into three groups, with definite specifications prepared for each group. A purchasing body might then decide which class of equipment it wishes to purchase and so limit the bidding to that classification.

The Research Committee has had under consideration for the past two years an intensive study of lighting, but thus far it has not been able to secure the funds necessary for such an investigation. It is hoped, however, that funds for this study, as well as for others badly needed in the school plant field, may be secured in the near future.

This report was prepared by T. C. Holy of Ohio State University.

Science Committee.—On recommendation of its Science Committee, the National Resources Planning Board has readjusted the membership of the Committee. It now consists of four nominees of the Academy of Sciences, four of the Social Science Research Council, four of

the American Council on Education, and four of the American Council of Learned Societies.

The Science Committee recommended the extension of its study of the relation of the federal government to research. A study by the National Research Council dealing with research in industrial laboratories, and a study in conjunction with the Social Science Research Council dealing with research by business, are now nearing completion.

Through the American Council on Education, the Science Committee has given consideration to the relations of educational institutions to the present world situation, with a view to insuring the effective adjustment of these institutions, especially their research activities, to Government and to current social conditions.

The Committee is now giving consideration to proposals for a new study in the population field.

Following the recommendation of the Science Committee, a cooperative undertaking was developed between the National Resources Planning Board and the Civil Service Commission for the compilation of a Roster of Scientific and Specialized Personnel. This activity has proceeded with the cooperation of the various scientific, learned, and professional societies and is developing a roster of personnel which can be available when immediate demands are made for trained personnel in a broad range of activities.

Curriculum Studies.—During the past year the Society for Curriculum Study has had under way three major projects. One, under the direction of Helen Heffernan, California State Department of Education, is a study of education and rural life. This committee proposes to produce within the next year a volume setting forth the present sociological conditions of rural living as they are related to the school program. Attention will then be paid to analyzing the principles of modern education in terms of the possibilities for utilizing them in the rural schools of America.

A second committee, under the chairmanship of C. O. Arndt of Northwestern University, has completed a volume on the teaching of foreign cultures and languages in the public schools. This committee undertakes to analyze the influence and contribution of foreign culture groups to American society and makes definite proposals for the teaching of foreign languages and of the contributions of foreign cultures.

A third committee is at work under the chairmanship of Bess Goodykoontz, U. S. Office of Education, on Home and Family Living. This report is being worked out in conjunction with a committee from the Department of Home Economics of the National Education Association. This committee proposes to analyze the problems of family life and to suggest areas and materials to which the public school curriculum may contribute.

The Society has also sent representatives to the meetings of the various projects sponsored by the American Council on Education of which it is an associate member. Two other projects are under consideration, one dealing with a committee report on consumer education and one with the use of visual-aid materials in the public school curriculum.

The executive secretary of the Society is J. Paul Leonard of Stanford University, who prepared this progress report.

Chicago Studies.—Current research projects being conducted by members of the Department of Education of the University of Chicago include G. T. Buswell's study of the relation of electron cephalograph reactions to various types of intellectual behavior; Newton Edward's investigation of the educational implications of recent social change; W. S. Gray's critical review of investigations relating to reading; N. B. Henry's comparative study of school support in rural and urban communities; and K. J. Holzinger's development of more comprehensive techniques for factor analysis. For the Social Science Research Committee of the University, L. V. Koos is making a comparative study of the organization and social effectiveness of the four-year junior colleges. D. A. Prescott, in connection with the Commission on Teacher Education, is analyzing the teacher training implications of recent research findings in the field of child development. Mandel Sherman is directing an extensive study of mental abnormalities among the general population and is also conducting intensive studies on the effect of frustration upon children. R. W. Tyler, in collaboration with the Evaluation Staff of the Eight-Year Study, is completing the final report on evaluation for this nation-wide project. He is also working with the staff of the Cooperative Study in General Education in developing evaluation instruments for use by cooperating colleges.

Columbia Projects.—The Institute of Educational Research, Division of Psychology, Teachers College, is completing work on the Semantic Count. By January 1, 1941, the staff will have completed the count of the frequency of occurrence of specific meanings of English words occurring in five million words of the texts. The texts were chosen from juvenile literature, adult literature, students' texts, Literary Digest, Encyclopedia Britannica, and the like.

Work is continuing on the vocational guidance follow-up which is entering its twentieth year of continuous vocational follow-up for some 2500 boys and girls now young men and young women. The follow-up will cease as of March 31, 1941, and a report will be issued on the basis of these results.

The Institute is publishing a mimeographed folder on the Lorge Formula for Estimating Grade Placement of Reading Materials. This formula and its work sheets were made available on November 1, 1940.

Announcement has been made of the retirement of Edward L. Thorndike who served continuously as director of the Institute of Educational Research from 1921 through July 1, 1940. Irving Lorge has been appointed executive officer of the Institute.

Georgia Problems.—During the current year the Institute for the Study of Georgia Problems, a research group of faculty members at the University of Georgia, is engaged in a cooperative enterprise in making basic studies necessary for a complete county-wide planning project. This investigation includes fifty or more separate studies and involves various types of technical projects. It is hoped that the project when completed

may serve as a basis for similar types of studies in other counties in the southeastern region.

Iowa State College.—The research projects listed below are carried on in the Rural Education Subsection of the Iowa Agricultural Experiment Station. This Section is an integral part of the College. Other projects are outlined in the February, 1940, number of the *Journal*.

Project No. 596, Nature and Extent of the Need for Education in Agriculture for Beginning Farmers in Iowa, J. A. Starrak, Leader.—The main objectives of this project are: (1) to discover the amount and kind of agricultural education possessed by beginning farmers in Iowa, (2) to get an estimate of the amount and kind of agricultural education that beginning farmers in Iowa need, and (3) to gather such other data as are fundamental to planning a more adequate program of agricultural education in this state. The data sheet used lists several hundred items under such general headings as the following: personal information, general education, agricultural education, occupational experience, outstanding problems, social and personal adjustment, etc. The sample census technique is followed. A field man began work in September of 1938 and has to date interviewed over 600 young farmers located in all sections of the state. The field work was completed on April 1, 1939; a manuscript will be prepared about March 1, 1941.

Project No. 704, Development of Scales to Measure Attitudes toward Agricultural Pursuits, James E. Wert, Leader.—The purpose of this study is to provide scales that may be used for guidance purposes and for the evaluation of certain aspects of instruction in Iowa.

Project No. 705, Current Instructional Practices in Rural High Schools, with Special Reference to Agriculture and Related Sciences, J. A. Starrak, Leader.—The purpose of this study is to ascertain and evaluate the objectives, course content, and methods of instruction in current use in the teaching of agriculture and related sciences. The schools to be interviewed will be visited by a trained observer and the instructional practices checked.

Marquette Studies.—Two projects are under way at Marquette University. R. L. C. Butsch is attempting to discover significant factors in the scholastic success of Marquette freshmen in the Colleges of Liberal Arts, Business Administration, Journalism, Speech, and Engineering. He has used the Iowa Content Examination and the American Council Psychological Examination as the prognostic bases. Marks are obtained for these students at six-week intervals for comparison with the predicted scores.

J. P. Treacy is conducting a study of the relationship of specific reading skills to ability to solve arithmetic problems. He is using eighteen criteria of reading skills, and is working with 600 seventh-grade pupils in two Milwaukee schools.

Surveys and Field Studies, Peabody College.—The Division of Surveys and Field Studies has conducted a brief survey of the schools at North Charleston, South Carolina, and Drew, Mississippi; a comprehensive survey of the Greenville, Mississippi, schools; a comprehensive survey of the Greenwood, Mississippi, schools; a study of the North Carolina

colleges under the control of the State Baptist Convention; and a study of rural education with special references to small rural schools.

The Division has furnished consultative service for state programs in Mississippi, Tennessee, Kansas, Alabama, and Florida. At the present time, it has a consultative relationship with the states of Tennessee, Alabama, and Oklahoma.

In addition to the state programs, the Division has extended its services to include county and local school districts, continuous advisory services being given in Sumter County, South Carolina, and Cullman County, Alabama. During the current year, Alamance County, North Carolina, has been added. The local schools which are being served by the Division have included Drew, Mississippi; North Charleston, South Carolina; and Wilson, Arkansas. The incidental services of the Division in recent years have included short periods of visitation and conferences in schools in widely distributed areas.

The Division has just completed, under the sponsorship of the Julius Rosenwald Fund, a study of small rural elementary schools of the South. The purpose of this study is to discover ways and means of improving rural schools and through them to develop ways and means of improving the quality of living in the rural South. The completed study presents a discussion of: (1) schools and community living in the rural South; (2) conditions observed in 200 small rural schools; (3) experiences of rural children; and (4) implications for teacher-education institutions, state departments of education, and local administrative units.

The Division is following up this study with the establishment of a continuing program of rural regional research and service. This rural research and service include original regional research in rural life and rural school problems, the collection and dissemination of helpful information pertaining to rural school problems, and the provision of consultative services to teacher-education institutions, state departments of education, and local administrative units regarding these problems.

The Division also operates the Curriculum Laboratory which provides guidance, materials, and facilities for official groups from state and local school systems engaged in planning for curriculum improvement. During the past three years, the following school systems have had groups in the Curriculum Laboratory: Kansas, Tennessee, Mississippi, Alabama, Florida, Oklahoma; North Charleston, South Carolina; Sumter County, South Carolina; Blytheville, Arkansas; Columbia, South Carolina; Nashville, Tennessee; Fairview, Alabama; Drew, Mississippi; and Wilson, Arkansas.

Coordinate with the development of state programs of curriculum improvement, the Division has conducted a Seminar of Teacher Education, including invited representatives of teacher-education institutions in the Southeastern Region. During the summer of 1940, a Junior College Workshop was conducted especially for selected representatives of the junior colleges of Mississippi.

This summary statement was prepared by Henry Harap, associate director of the Division.

Pittsburgh School Survey.—The report of the survey of the public schools of Pittsburgh, Pennsylvania, conducted by the Division of Field Studies (George D.

Strayer, director) of the Institute of Educational Research, Teachers College, Columbia University, recently has come from the press. This survey was undertaken on the invitation of the board of public education of the City of Pittsburgh. The board authorized this inquiry after a complete financial survey had been made which, in its judgment, failed to take account of the fundamental educational issues involved in the maintenance of the public schools of Pittsburgh.

Thirty-five members of the staff of Teachers College, Columbia University, directed the field work of the survey and prepared the report. Each individual member of the survey staff was supported by field workers who were chosen from among the advanced graduate students enrolled in Teachers College during the academic year, 1939–40. There were in all sixty-five students who participated, each of whom spent at least two weeks in Pittsburgh. In addition to the members of the teaching staff of the College and the field workers, six research workers were employed for a period of four months.

The survey report is presented in two main divisions. The first deals with curriculum and teaching, and the second with the problems of administration and finance.

The report is available through the Bureau of Publications, Teachers College, Columbia University, bound in cloth (564 pages), and sells for $1.50.

Yale Clinic of Child Development, 1939–1940.—Follow-up examinations have been made of a group of normative children who were intensively studied in infancy and who have been restudied with cinema recordings at annual intervals over a period of ten years.

A study entitled, "Learning and Growth in Identical Infant Twins" (Gesell and Thompson, 1929), introduced the method of co-twin control. The development of the same pair of identical twins has been carefully followed for a period of thirteen years, by means of experimental studies and periodic physical and mental measurements. During the present year voluminous anthropometric, behavioral, and cinematographic data have been analyzed preparatory to publication. This study constitutes a detailed and objective analysis of the genesis and permanence of individual differences, experimentally and clinically defined by co-twin comparison.

A developmental study of two infants with cerebral defect was made by Miss Thompson. Burton M. Castner has made a developmental study of lateral dominance (handedness), using as subjects children of the normative group on whom data concerning handedness had been obtained at progressive age levels from four weeks through seven years. The problem has been studied from the standpoint of reading disabilities as well as laterality. Numerous case records have also been surveyed to determine the reliability of clinical diagnosis and prediction made in the preschool period.

Studies have been made of the developmental stages in the ontogenetic organization of prone behavior in human infancy (Gesell and Ames). By means of cinema analysis the psychomotor tempo of individual infants has been measured, supplying objective and quantitative evidence on the problem of con-

stitutional individual differences. Mrs. Ames has made a study of the motor correlates of infant crying.

Henry M. Halverson has extended his neurophysiological investigation of infant behavior. Systematic data have been secured, using objective methods of recording pulse, respiration, body movements, grasping, muscular tensions, and tonus. These studies deal with developmental changes in the physiological characteristics of infants at advancing ages, a relatively unexplored field of medical and genetic significance. Bing-chung Ling, associated with the Clinic as Research Fellow, has made a cinemagraphic investigation of the development of eye movements in early infancy, from a few hours after birth to twenty-four weeks of age.

Frances Ilg has made intensive studies of significant behavior cases examined at recurrent intervals and observed over long periods of time. These studies deal with the developmental determinations of personality in infants and in children of preschool age.

Catherine S. Amatruda has continued her analysis of the development of behavior during the neonatal period. She is also making individual studies of atypical and defective behavior development in infants seen on the Out-patient Service of the Clinic.

A collaborative volume has just been published under the title of *The First Five Years of Life: A Guide to the Study of the Preschool Child*. This volume outlines methods of psychological examination and provides behavior characterizations of children at the following age levels: 4, 16, 28, and 40 weeks; 1 year; 18 months; and 2, 3, 4, and 5 years.

The director of the Clinic is Arnold Gesell, who forwarded this news item.

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